

THE
BENGAL PLAGUE MANUAL,

BEING

A collection of the extant Regulations and Executive Orders in connection with Plague issued by the Government of India and the Government of Bengal.

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LIST OF CONTENTS.

CHAPTER I.

Epidemic Diseases Act, 1897.

	PAGE.
1. The Act	1
2. Notification delegating to Local Governments the powers conferred by the Epidemic Diseases Act	2

CHAPTER II.

Regulations issued under the Epidemic Diseases Act.

1. Plague Regulation A (for Calcutta and larger Municipal towns and cantonments)	3
2. Plague Regulation B (for minor municipal towns and cantonments)	7
3. Plague Regulation C (for villages and non-municipal towns)	11
4. Plague Regulation D (Rules for the examination of travellers)	14
5. Plague Regulation No. 14 (Rules for the examination of vessels and passengers leaving the ports of Calcutta and Chittagong)	17
6. Plague Notification No. 3 (Rules for the examination of vessels and passengers leaving the Orissa ports)	21
7. Prevention of the introduction of plague by sea	24
8. Subsidiary rules regarding above	26

CHAPTER III.

Extant general orders and circulars regarding plague measures.

1. Instructions of the Government of India regarding the policy to be followed in carrying out plague measures	29
2. Employment of force for the purpose of carrying out the evacuation and disinfection of infected houses and villages prohibited	30
3. Instructions explanatory of the provisions of Plague Regulations A, B, and C	32
4. Instructions of the Government of India on the subject of the discovery of plague in rural areas	34
5. Bengal Government orders regarding the organisation to be made to discover plague cases in rural areas	40
6. Symptoms of plague and general instructions	40
7. Orders of the Government of India regarding segregation	42
8. Bengal Government orders regarding segregation in Calcutta	43
9. Ditto ditto in mufassal	44
10. Orders of the Government of India regarding evacuation	45
11. Bengal Government orders regarding evacuation	46
12. Recommendations of the Indian Plague Commission on the subject of disinfection and the orders of the Government of India thereon	46
13. Training of a disinfecting staff and preparation of disinfectant solution	55
14. Sanitary Commissioner's instructions regarding the method of disinfection	56
15. Orders of the Government of India regarding quarantines and cordons	58
16. Bengal Government orders withdrawing the power to employ cordons	62

	PAGE.
17. Orders of the Government of India regarding examination of corpses	62
18. Government of India's Resolution regarding inoculation	63
19. Bengal Government orders directing how and when inoculation is to be introduced in any area	68
20. Precautions to be observed in performing inoculations	69
21. Instructions for the use of the plague prophylactic	69
22. Mode of sterilizing inoculation needles	71
23. Procedure for obtaining supplies of the plague serum and syringes	71
24. Rules for the transmission of plague cultures	72
25. Ditto ditto by post	73
26. Rules to be observed in sending fresh materials for bacteriological examination	74

CHAPTER IV.

Miscellaneous provisions.

1. Treatment of plague cases detected in railway trains	76
2. Disinfection of contaminated or suspected railway vehicles	77
3. Orders regarding pilgrimage to the Hedjaz	79
4. Rules for the treatment of returning pilgrims	79
5. Rules regarding waste paper and rags	79
6. Duties of the police in connection with plague	81

CHAPTER V.

Abstract of general orders regarding the submission of reports and returns.

1. Copies of all Regulations to be forwarded to the Government of India and of the more important ones to other Local Governments	84
2. Method of determining when an area is to be considered as infected with plague	84
3. Sending of daily, weekly, and monthly plague reports to the Government of India and other Governments	84
4. Orders to be observed by the local officers in submitting the daily, weekly, and monthly plague reports to Government	85
5. In places outside Calcutta, no distinction is to be made between plague and suspicious cases	86
6. Reporting of plague-free districts and towns	86
7. Rule for determining when an area is to be considered as free from plague	87
8. The cause of the recrudescence of plague in any place to be enquired into by the local officers and reported to Government	87
9. A collection of the more important orders prescribing the submission of reports and returns referred to in the above abstract printed in <i>extenso</i>	87

APPENDIX A.

Procedure to be adopted in obtaining the services of Military officers for plague duty	94
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APPENDIX B.

Plague allowances and leave	95
---------------------------------------	----

CHAPTER I.

EPIDEMIC DISEASES ACT, 1897.

(1) ACT No. III OF 1897.

PASSED BY THE GOVERNOR-GENERAL OF INDIA IN COUNCIL.

*(Received the assent of the Governor-General on the 4th
February, 1897.)*

An Act to provide for the better prevention of the spread of Dangerous Epidemic Disease.

WHEREAS it is expedient to provide for the better prevention of the spread of dangerous epidemic disease; It is hereby enacted as follows:—

1. (1) This Act may be called the Epidemic Diseases Act, 1897.

Short title,
extent and
commencement.

(2) It extends to the whole of British India (inclusive of Upper Burma, British Baluchistan, the Santal Parganas, and the Pargana of Spiti); and

(3) It shall come into force at once.

2. (1) When at any time the Governor General in Council is satisfied that India or any part thereof is visited by, or threatened with, an outbreak of any dangerous epidemic disease, the Governor General in Council, if he thinks that the ordinary provisions of the law for the time being in force are insufficient for the purpose, may take, or require, or empower any person to take, such measures and, by public notice, prescribe such temporary regulations to be observed by the public or by any person or class of persons as he shall deem necessary to prevent the outbreak of such disease or the spread thereof, and may determine in what manner and by whom any expenses incurred (including compensation, if any) shall be defrayed.

Power to
take special
measures and
prescribe
regulations as
to dangerous
epidemic
disease.

(2) In particular and without prejudice to the generality of the foregoing provisions, the Governor General in Council may take measures and prescribe regulations for—

- (a) the inspection of any ship or vessel leaving, or arriving at, any port in British India and such detention thereof, or of any person intending to sail therein or arriving thereby, as may be necessary; and
- (b) the inspection of persons travelling by railway or otherwise, and the segregation, in hospital, temporary accommodation or otherwise, of persons suspected by the inspecting officer of being infected with any such disease.

(3) The Governor General in Council may, by general or special order, direct that all or any of the powers conferred by this Act may also be exercised by any Local Government with respect to the territories administered by it.

Penalty.

XLV of 1860.

Protection to
persons acting
under Act.

3. Any person disobeying any regulation or order made under this Act shall be deemed to have committed an offence punishable under section 188 of the Indian Penal Code.

4. No suit or other legal proceeding shall lie against any person for anything done or in good faith intended to be done under this Act.

(2) NOTIFICATION DELEGATING TO LOCAL GOVERNMENTS THE POWERS CONFERRED BY THE EPIDEMIC DISEASES ACT.

HOME DEPARTMENT.

NOTIFICATION.

No. 302.

SANITARY.

Calcutta, the 4th February, 1897.

WHEREAS certain parts of India are visited by, and others threatened with, an outbreak of dangerous epidemic disease known as bubonic plague, the Governor General in Council, in exercise of the powers conferred by section 2, sub-section (3) of the Epidemic Diseases Act, 1897, is pleased to direct that the powers conferred by the said Act may be exercised by Local Governments with regard to their respective territories as follows:—

- (a) all the said powers by the Governors of Fort St. George and Bombay in Council, the Lieutenant-Governor of Bengal and Chief Commissioner of Burma;
- (b) the powers conferred by section 2, sub-section (1) and sub-section (2), clause (b) by the Lieutenant-Governor of the North-Western Provinces and Chief Commissioner of Oudh, the Lieutenant-Governor of the Punjab and the Chief Commissioner of the Central Provinces; and
- (c) the powers conferred by section 2, sub-section (2), clause (b) by the Chief Commissioners of Assam, Coorg and British Baluchistan.

J. P. HEWETT,

Secretary to the Government of India.

CHAPTER II.

REGULATIONS ISSUED UNDER THE EPIDEMIC DISEASES ACT.

(1) PREVENTION OF THE SPREAD OF PLAGUE IN CALCUTTA AND LARGER MUNICIPAL TOWNS AND CANTONMENTS.

PLAGUE REGULATION A.

Dated 8th October 1900.

In exercise of the powers conferred by sub-section (1) of section 2 of the Epidemic Diseases Act, 1897, and by the notification of the Government of India in the Home Department, No. 302, dated 4th February 1897, and in supersession of Parts III and IV of Plague Notification No. 9 of 10th November 1897, which are hereby cancelled, the Lieutenant-Governor of Bengal is pleased to prescribe the following Regulation for preventing the spread of plague in Calcutta and other municipal towns specified therein :—

1. This regulation shall come into force at once.
2. It extends to Calcutta and to the municipalities of Howrah, Patna, Gaya, Dacca, and all municipal towns and cantonments which at the census of 1891 had a recorded population in excess of 10,000.

3. *Definitions—*

Magistrate means, in Calcutta, the Chairman of the Calcutta Corporation, and elsewhere the District Magistrate or Deputy Commissioner.

Health Officer means, in Calcutta, the Health Officer of Calcutta, and includes a Special Health Officer and an Assistant Special Health Officer and a District Medical Officer, and elsewhere the Civil Surgeon of the district, and includes a Civil Medical Officer or the Medical Officer in charge of a cantonment, an Assistant Surgeon in medical charge of a district or subdivision or a municipal dispensary, and an Assistant Health Officer.

4. *Appointment of Health Officers.*—The Magistrate, subject to the general instructions of the Commissioner, or in Calcutta of the Local Government, may appoint a Health Officer either by name or by virtue of office to devise and carry out, under the Magistrate's general directions, all measures necessary to prevent the spread of the plague, and may fix his pay. He may also appoint such Assistant Health Officers and subordinate staff to assist the Health Officer in carrying out his duties as he may consider necessary, and may fix their pay. Outside Calcutta, all Health Officers shall be subordinate to the Civil Surgeon.

NOTE.—In selecting persons, whether in the service of Government or otherwise, for appointment as Health Officers under this rule, the District Magistrate should always consult the Inspector-General of Civil Hospitals, Bengal, and obtain his approval of the nomination before making the appointment.—(*Circular No. 107-Medl., dated 26th August 1898.*)

5. *Division of the town into sanitary circles or districts.*—For the proper working of these rules, the Magistrate may divide the town into sanitary circles or districts of a convenient size, and may appoint one or more District Medical Officers for each district.

6. *Ward Committees.*—In every ward or portion of a ward the Magistrate may appoint Ward Committees, and may assign to them such duties in connection with disinfection and other measures for the discovery and prevention of plague as he may deem fit. He may provide them with such clerical and subordinate staff as may be necessary for the discharge of their duties.

7. *General sanitary precautions.*—The Magistrate or Cantonment Magistrate may issue general orders that by a specified date certain sanitary precautions of a simple nature, such as the lime-washing of houses, the cleaning of latrines, or the removal of filth or rubbish, shall be carried out. The persons to whom such order is addressed shall comply with it.

8. *Duties of Police.*—All Police Officers are required to give to the Health Officer such assistance as he may consider necessary in carrying out the rules of this Regulation, upon the order of the Magistrate, or, in Calcutta, after application for such assistance has been made by the Chairman of the Corporation to the Commissioner of Police.

9. *Report by house-holder.*—If in any house a person suffers from sudden fever, glandular swellings in the neck, armpits or groin, pain in the chest with cough and feeling of oppression, or delirium, or dies from such fever or with any of the foregoing symptoms, the owner of such house, or, if the owner be non-resident, the occupier, or the person who collects rent for the house or any part of it, or any person who would be bound, under section 532 of the Calcutta Municipal Act, 1899, to give information of a death in the house, shall forthwith report the occurrence of such illness or death to the Health Officer or at the nearest police-station.

NOTE 1.—The duty of notifying sickness or plague is imposed on private individuals. The power of enforcing this duty by a legal penalty, while not formally withdrawn, is, however, one which should not ordinarily be exercised. For obtaining information of the occurrence of cases and for exercising surveillance over persons coming from infected areas, the co-operation of the people themselves is the first essential. The duty of reporting cases of plague may be entrusted to such volunteer agencies as may be constituted under the regulations wherever they are willing to accept it. It should not, however, be pressed on them.—(*Circular No. 22T.—P., dated 8th October 1900; page 32 of the Plague Manual.*)

NOTE 2.—The use of search-parties, paid spies, and informers is prohibited.—(*Paragraph 57 of the Government of India's Resolution of 16th July 1900.*)

10. *Reports by medical practitioner.*—Any medical practitioner who attends in any house a case which he has reason to believe to be a case of plague, or which presents symptoms which may be those of plague, shall forthwith report such illness to the Health Officer.

11. *Report from factories.*—If any person employed in a factory suffers from sudden fever, glandular swellings in the neck, armpits or groin, pain in the chest, or with cough and feeling of oppression or delirium, or dies from such fever or with any of the foregoing symptoms, the occupier of such factory shall immediately report in writing to the

Magistrate the fact of such illness or death and the name and address of the employé.

The word "factory" used in this rule means any premises wherein is carried on any process for, or incidental to, making, altering, repairing, ornamenting, finishing, or otherwise adapting for use or sale any article or part of an article, and wherein steam, water or other mechanical power is used in aid of any such process.

12. *Right of entry and examination.*—If the Health Officer has reason to believe that there is in any house any person who is suffering from plague, or from a disease which may in his opinion prove to be plague, the owner and occupier of such house shall permit the Health Officer to enter therein and examine all or any inmates thereof. If any of such inmates be a female who, according to the custom of the country, does not appear in public, the examination shall be made through a female doctor, female hospital assistant, or other female agency.

NOTE 1.—Compulsory examination of dead bodies should never be attempted. The object which it is designed to attain will be effected by treating during an outbreak of plague in towns all deaths, the cause of which cannot be determined not to be plague, as deaths from plague, and by disinfecting the houses in which they occur. (*Paragraph 23 of the Government of India's Resolution No. 1789—1804, dated 16th July 1900.*)

NOTE 2.—Medical Officers employed on plague work are not to receive any fee for making any examination, for paying any visit, or for performing any other function or service in the course of executing their duties under the Plague Regulations—(*Circular No. 24 ^{Med.}_{P.}, dated 15th February 1900.*)

13. *Disinfection, cleansing, &c., by house-holder.*—The owner and occupier of any house in which a case of plague, or a case which is suspected by the Health Officer to have been one of plague, has occurred, and the head of any family resident therein shall comply with any direction that may be issued by the Health Officer with regard to the disinfection and cleansing of the whole house, the disinfection or destruction of bedding, clothing, and articles of a similar nature, the improvement of the sanitary condition of the premises, the removal, in consultation with a competent Engineer, of all partitions, erections or portions of house-walls which obstruct light and ventilation, and other sanitary matters, and shall permit the Health Officer to enter his house or premises for the purpose of inspection: Provided that, when an apartment is occupied by a female who, according to the custom of the country, does not appear in public, the Health Officer shall not enter such an apartment without giving notice and affording time to such female to withdraw. In such inspections the Health Officer shall, if possible, always be accompanied by a male member of the family.

14. *Disinfection, cleansing, &c., by Health Officer.*—When a case of plague or suspected plague has occurred in a house, the Health Officer shall, if he considers it necessary, himself take measures for the disinfection of the whole house and for the other matters referred to in the preceding and the present rules.

On the death or recovery or removal of person suffering from plague, or suspected plague, the room occupied by such person shall be thoroughly disinfected, and the Health Officer may, if he thinks fit,

similarly disinfect the whole or any part of the building. All clothing or bedding or other articles which are likely to have become contaminated shall at once be disinfected or destroyed on payment of adequate compensation.

If disinfection cannot be satisfactorily effected otherwise, the Health Officer, with the sanction of the Magistrate, may burn or otherwise demolish any hut or other temporary structure, adequate compensation being paid.

NOTE 1.—Disinfection should only be carried out under the superintendence of the Civil Surgeon, Assistant Surgeon or Civil Hospital Assistant. Each Civil Surgeon should instruct the Assistant Surgeons, Civil Hospital Assistants, Inspectors and Sub-Inspectors of Vaccination subordinate to him in the methods of disinfection prescribed in paragraphs 36 to 39 of the Resolution of the Government of India, Home Department, No. 1789—1804, dated 16th July 1900, and in the Report of the Indian Plague Commission. (*Circular No. 23T.—P., dated 22nd October 1900; page 55 of the Plague Manual.*)

NOTE 2.—Government is not in favour of the burning of huts except where disinfection is impracticable, and in no case should this be done without the full consent of the owners and on payment of compensation, the amount of which should be decided in each case according to circumstances, and which invariably should be liberal. (*Government orders Nos. 609Med.—P., and 746Med.—P., dated 8th and 22nd March 1901, respectively.*)

NOTE 3.—Grain from an infected building should be spread out in a thin layer and turned over and exposed to air and strong sun for 48 hours. Grain bags should be boiled and dried in a strong sun.

NOTE 4.—Local officers should abstain from employing force for the purpose of carrying out evacuation and disinfection. They should persevere, with all the patience, tact and kindness they can command, in impressing on the people the importance of resorting to these measures, and should encourage them to adopt them in every way by advice, by persuasion, and by supplying them with materials, labour, and any other assistance that may be desired. If any person or class of persons, nevertheless, finally refuse to comply, force should not be used to coerce them, and they should be left to take such steps as they may be willing to adopt. (*Government order No. 1468Med.—P., and Circular No. 55Med.—P., dated 6th April 1900; pages 30-32 of the Plague Manual.*)

15. The Health Officer may take measures for the disinfection of any premises adjacent to a house in which a case of plague or suspected plague has occurred, and any premises to which there is, in his opinion, danger of infection being conveyed from such house.

16. *Prohibition of rag-picking.*—Except on conditions separately notified by Government, no person other than a municipal servant shall collect or transport rags or other refuse. The Magistrate may disinfect, or at his discretion destroy, any collection of rags in rag-pickers' houses or rag stores.

17. *Duty of compliance.*—A person dealt with under the foregoing rules shall comply with any directions that may be given to him by the Health Officer with regard to disinfection of houses, bedding or other articles, or with respect to any other sanitary matter connected with these rules.

18. *Provision of hospitals.*—The Magistrate may make such provision as he may deem necessary for hospitals for persons suffering from plague. No person shall be removed to such a hospital without his consent, and the friends and relatives of a sick person in hospital shall, if they desire be admitted to visit and attend on him.

NOTE.—The removal of moribund patients to hospitals is prohibited.—(*Paragraph 27 of Home Department Resolution No. 1789—1804, dated 16th July 1900.*)

19. *Compensation.*—The Magistrate shall pay adequate compensation to any person who has sustained substantial loss or damage by reason of anything done under these rules.

NOTE.—The compensation to be paid should be liberal in all cases, *vide* note (2) under rule 14 above.

20. *Control.*—All powers conferred upon the Health Officer or on a Plague Authority by these rules shall be exercised subject to the general control of the Magistrate.

21. *Expenses.*—All expenses incurred in carrying out these rules shall be paid from the Municipal Fund, but the Magistrate may recover from any person any amount which such person would, under similar circumstances, be liable to pay under the Calcutta Municipal Act, 1899, or the Bengal Municipal Act of 1884, or the Cantonment Act of 1889, or any rules or bye-laws made thereunder.

(2) PREVENTION OF THE SPREAD OF PLAGUE IN MINOR MUNICIPAL TOWNS AND CANTONMENTS.

PLAGUE REGULATION B.

Dated the 8th October 1900.

IN exercise of the powers conferred by sub-section (1) of section 2 of the Epidemic Diseases Act, 1897, and by the notification of the Government of India in the Home Department, No. 302, dated 4th February 1897, and in supersession of the rules contained in Plague Regulations Nos. 10 and 11, dated the 8th February 1898, which are hereby cancelled, the Lieutenant-Governor is pleased to prescribe the following regulation for preventing the spread of plague into minor municipal towns and cantonments :—

1. *Date of taking effect.*—This regulation shall come into force at once.

2. It extends to all municipal towns and cantonments other than those to which Plague Regulation A of this date applies.

3. *Health Officer defined.*—The words “Health Officer” in the following rules mean the Civil Surgeon of the district, and include a Civil Medical Officer, a Military Medical Officer in charge of a cantonment, an Assistant Surgeon in medical charge of a district or subdivision or a municipal dispensary, and any medical practitioner appointed by the District Magistrate under rule 4.

4. *Appointment of Health Officers.*—In any municipality or cantonment the District Magistrate, subject to the general instructions of the Commissioner, may appoint as many Health Officers as may be necessary to prevent the introduction or spread of the disease, and may fix their pay. He may also appoint such subordinate staff to assist the Health Officers in carrying out their duties as he may consider necessary, and may fix their pay. All such Health Officers shall be subordinate to the Civil Surgeon.

NOTE.—Appointment of Health Officers should only be made with the previous approval of the Inspector-General of Civil Hospitals, Bengal, *vide* note under rule 4, Regulation A.

5. *Appointment of Vigilance and Medical Committees.*—The District Magistrate may appoint Vigilance or Medical Committees from among the influential residents in each municipality and cantonment within his jurisdiction, and may assign to them such duties in connection with disinfection and other measures for the discovery and prevention of plague as he may deem fit. He may provide them with such clerical and subordinate staff as may be necessary for the discharge of their duties.

6. *General sanitary precautions.*—In any municipality or cantonment the Magistrate of the district or the Cantonment Magistrate may issue general orders that by a specified date certain sanitary precautions of a simple nature, such as the limewashing of houses, the cleaning of latrines, or the removal of filth or rubbish, shall be carried out. The persons to whom such order is addressed shall comply with it.

7. *Report by house-holder.*—It shall be the duty of every owner of a house, or, if the owner be non-resident, the occupier, or the person who collects rent for the house or any part of it, to promptly report to the Health Officer or to the District Magistrate the occurrence of any case of plague or suspected plague in premises owned or occupied by him.

8. If there is resident in any house a person who has come within ten days from any area infected with plague, the owner of such house, or, if the owner be non-resident, the occupier, or the person who collects the rent of the house or any part of it shall report forthwith to the Health Officer or to the District Magistrate all cases of fever which may occur among the residents of the house.

NOTE.—*Vide* notes under rule 9, Regulation A.

9. *Report by Medical Practitioner.*—Any medical practitioner who attends in any house a case which he has reason to believe to be a case of plague, or which presents symptoms which may be those of plague, shall forthwith report such illness to the Health Officer or District Magistrate.

10. *Reports from factories.*—Every occupier of a factory shall immediately report in writing to the District Magistrate the occurrence of any case of plague or suspected plague in premises owned or occupied by him.

The word “factory” used in this rule means any premises wherein is carried on any process for or incidental to, making, altering, repairing, ornamenting, finishing or otherwise adapting for use or sale any article or part of an article, and wherein steam, water or other mechanical power is used in aid of any such process.

11. *Registration of burial and burning-grounds.*—In every municipality and cantonment the District Magistrate shall cause to be registered any place used as a burial or burning ground which has not been already registered under section 254 of the Bengal Municipal Act, 1884, and no place which has not been registered either under that section or under this rule shall be used as a burial or burning-ground.

NOTE.—Compulsory examination of dead bodies should never be attempted. The object which it is designed to attain will be effected by treating during an outbreak of plague in towns all deaths the cause of which cannot be determined

not to be plague as deaths from plague, and by disinfecting the houses in which they occur. It will of course be open to any persons to voluntarily submit a dead body to the examination of a Medical Officer if they wish to avoid the death being treated as due to plague. (*Paragraph 23 of the Government of India's Resolution No. 1789—1804, dated 16th July 1900.*)

12. *Procedure in case of suspected plague.*—When the Health Officer has reason to believe that there is in any house any person who is suffering from plague, or that a case of plague has occurred in a house, he shall proceed with, if possible, the members of the Vigilance or Medical Committee, to inquire into the case and to examine all or any inmates of the house. The owner and occupier of the house shall permit the Health Officer to enter his premises and examine any person whom such Health Officer has reason to believe to be infected with plague. If the person is a female, the examination shall be made through female agency.

NOTE.—*Vide* note 2 under rule 12, Regulation A.

13. *Disinfection and cleansing of houses, etc., by Health Officer.*—In any house in which a case of plague or suspected plague has occurred, the Health Officer shall take measures for the disinfection and cleansing of the house, the destruction of bedding, clothing and articles of a similar nature, the improvement of the sanitary condition of the premises, the removal, in consultation, if possible, with a competent Engineer, of all partitions, erections or portions of house-walls which obstruct light and ventilation, and for other sanitary precautions. The District Magistrate on the report of the Health Officer may order the burning or destruction of any hut or other temporary structure, if disinfection cannot be satisfactorily effected otherwise. In cases where any property is ordered to be destroyed under these rules, adequate compensation shall be paid to the owner.

14. The Health Officer may take measures for the disinfection of any premises adjacent to a house in which a case of plague or suspected plague has occurred, and of any premises to which there is in his opinion danger of infection being conveyed from such house.

NOTE.—The notes under rule 14, Regulation A apply here also.

15. *Evacuation of street or quarter.*—If plague has become prevalent in a portion of a municipality or cantonment, the Magistrate of the district, or the Cantonment Magistrate, may, with the sanction of the Commissioner, direct the inhabitants of any street, mahalla or other locality to vacate their houses and to remove to a temporary settlement at a distance from the infected quarter. The District Magistrate, or the Cantonment Magistrate, shall previously provide temporary accommodation for all persons required to vacate their houses. The Health Officer shall arrange for the thorough disinfection and cleansing of the empty premises, and no person shall be permitted to return until the premises have been certified to be free from infection.

16. *Segregation.*—Where the District Magistrate, in consultation with the Health Officer, considers that removal of a plague patient to hospital is a precaution necessary for the protection of the neighbouring

population, he may direct the removal of the patient to a hospital for treatment.

Explanation.—The power conferred by this rule shall only be exercised in isolated cases at the commencement of an outbreak, or in the case of persons who have no friends or relatives to attend to them.

NOTE.—The removal of moribund patients to hospital is prohibited.—(*Paragraph 27 of Home Department Resolution of 16th July 1900.*)

17. Where, under the circumstances stated in the explanation to the preceding rule, the District Magistrate has ordered the removal of a patient to hospital, he may also order such persons as have been in immediate contact with the patient to be removed to a segregation camp and detained under observation for ten days.

18. *Duty of compliance.*—Every person to whom an order is given by any officer empowered to act under the preceding rules with regard to any matter falling under these rules shall duly obey that order. Any person who may be removed to a hospital in a cantonment by order of the Military Medical authorities shall comply with any directions that may be given to him by the Health Officer with regard to his removal to, and residence in, an observation shed, public or private hospital or place of segregation, and with respect to disinfection or burning of bedding, clothing and articles of a similar nature, or with respect to any other sanitary matter. He shall not depart from any such place without the written permission of the Health Officer.

19. *Provision of Hospitals and Camps.*—The District Magistrate may make such provision as he may deem necessary for hospitals for persons suffering from plague and for camps for the detention of contacts. He may also certify hospitals and camps erected by private individuals as being fit to be used for the purposes of rules 16 and 17 of this Regulation.

20. Free access shall be given to friends or relations desiring to attend any person under treatment in a hospital established under these rules.

21. *Compensation.*—The District Magistrate or the Cantonment Magistrate shall pay adequate compensation to any person who has sustained substantial loss or damage by reason of anything done under these rules.

NOTE.—The compensation to be paid should be liberal in all cases.

22. *Control.*—All powers conferred upon the Health Officer or the Cantonment Magistrate by these rules shall be exercised subject to the general control of the District Magistrate.

23. *Delegation of powers.*—All or any of the powers of the District Magistrate may, with the sanction of Government, be exercised by any other gazetted officer of Government.

24. *Expenses.*—All expenses incurred in carrying out these rules shall be paid from the Municipal or Cantonment Fund of Municipality or Cantonment concerned; but the District Magistrate may recover from any person any sum which such person would in the circumstances be liable to pay under the provisions of the Bengal Municipal Act of 1884 or the Cantonment Act of 1889, or any rules or bye-laws made thereunder.

(3) PREVENTION OF THE SPREAD OF PLAGUE IN VILLAGES AND NON-MUNICIPAL TOWNS.

PLAGUE REGULATION C.

Dated 8th October 1900.

In exercise of the powers conferred by sub-section (1) of section 2 of the Epidemic Diseases Act, 1897, and by the notification of the Government of India in the Home Department, No. 302, dated 4th February 1897, and in supersession of the rules contained in Plague Regulations Nos. 12 and 13, dated the 8th February 1898, which are hereby cancelled, the Lieutenant-Governor of Bengal is pleased to prescribe the following regulation for preventing the importation of plague into villages and non-municipal towns:—

1. *Date of taking effect.*—This regulation shall come into force at once.

2. *Appointment of Subdivisional Health Officers.*—The District Magistrate may, subject to the control of the Commissioner, appoint as many Subdivisional Health Officers as he may think necessary, and may fix their pay. All such officers shall be subordinate to the Civil Surgeon of the district.

See note under Rule 4, Regulation A.

3. *Appointment of Medical and Vigilance Committees.*—The Subdivisional Magistrate may appoint Medical or Vigilance Committees for any town, village, or group of villages within his jurisdiction, and may assign to them such duties in connection with disinfection and other measures for the discovery and prevention of plague as he may deem fit.

4. *Report by proprietors of lands and others.*—Every owner or occupier of land and the agent of any such person, every patwari and every panchayat appointed under Act VI (B.C.) of 1870, and every person employed in the collection of revenue or rent by Government or the Court of Wards shall report to the Subdivisional Magistrate or Health Officer any case of plague or suspected plague that may occur in his neighbourhood.

5. *Report by householder.*—If there is resident in any house a person who has come within ten days from any area infected with plague, the owner of such house shall report forthwith to the Subdivisional Magistrate or Health Officer all cases of fever which may occur among the residents of the house.

6. *Appointment of Enquiring Agencies.*—If the District Magistrate considers that any tract of country is by reason of its proximity to, or intercourse with, an infected area in peculiar danger of infection, he may, with the previous sanction of the Local Government, employ and pay a suitable staff for the purpose of making special enquiries as to the existence of plague within a defined area.

NOTE.—When a district becomes infected, it should be divided into charges or blocks, each comprising a convenient number of villages, say, 50 as an average. The precise number must depend on their size, population, and distance apart.

Each charge or block should be placed under the direct supervision of a selected officer (who should be either a European or a carefully chosen native),

who should be required to make his head-quarters at some convenient place within it.

The chaukidars of the 50 (more or less) villages within the charge should be required to attend and report *every day* at certain selected convenient centres within the charge, and their reports should be submitted the same day to the charge superintendent. It is not sufficient that they should report only once a week at the thana.

The charge superintendent should arrange to visit every village under his superintendence at least once a week, and if possible once in three days. At these visits he should test the reports of the chaukidars, and should make independent enquiries to ascertain whether suspicious cases have occurred, and whether cases are being concealed.

Each charge superintendent should submit a *brief* daily report to the District Magistrate, showing the cases and deaths in each village in his charge, and stating any facts of importance which may come to his notice. He should also be employed in carrying out and supervising the evacuation and disinfection of infected houses, the construction of camps, and generally in carrying out the various measures, preventive and remedial, which have been prescribed.—(*Govern-*

ment order No. 1015 $\frac{Med.}{P.}$, and Circular No. 36 $\frac{Med.}{P.}$, dated respectively 10th and 13th March 1900.)

7. *Powers of Enquiring Agencies.*—Any enquiring agency which may be constituted under rule 6 of this regulation may be empowered to enter any house and examine any person within the area assigned as its jurisdiction. Examination of females shall in all cases be made through female agency.

NOTE.—The power of making house-to-house visitation should only be conferred in exceptional circumstances and under the special orders of Government.—(*Circular No. 22T.—P., dated 8th October 1900; page 32 of the Plague Manual.*)

8. *Procedure in case of suspected plague.*—When the Subdivisional Magistrate or the Health Officer has reason to believe that a case of plague has occurred in a house, he shall proceed to enquire into the case and shall examine the patient. If the patient be a female, the examination shall be made through female agency.

NOTE.—*Vide* notes under rule 12, Regulation A.

9. *Disinfection and cleansing of houses, &c., by Health Officer.*—In any house in which a case of plague or suspected plague has occurred, the Subdivisional Magistrate or Health Officer shall take measures for the disinfection and cleansing of the house, the destruction of bedding, clothing and articles of a similar nature, the improvement of the sanitary condition of the premises, the removal, in consultation, if possible, with a competent Engineer, of all partitions, erections or portions of house-walls which obstruct light or ventilation, and for other sanitary precautions. The Subdivisional Magistrate may, on the report of the Health Officer, order the burning or destruction of any hut or other temporary structure, if disinfection cannot be satisfactorily effected otherwise. In cases where any property is ordered to be destroyed under this rule, adequate compensation shall be paid to the owner.

Vide notes under Rule 14, Regulation A.

10. The Health Officer may take measures for the disinfection of any premises adjacent to a house in which a case of plague or suspected

plague has occurred, or of any premises to which there is, in his opinion, danger of infection being conveyed from such house.

11. *Evacuation of village.*—On the occurrence of plague in a town or village, the Subdivisional Magistrate may direct the inhabitants to vacate their houses and to remove to a temporary settlement outside the town or village, and he shall, when necessary, provide such persons with temporary accommodation. After evacuation the Health Officer shall arrange for the thorough disinfection and cleansing of the empty premises, and the inhabitants shall not be permitted to return until the premises have been certified to be free from infection.

12. *Segregation.*—Where the District Magistrate, in consultation with the Health Officer, considers that removal of a plague patient to hospital is a precaution necessary for the protection of the neighbouring population, he may direct the removal of the patient to a hospital for treatment.

Explanation.—The power conferred by this rule shall only be exercised in isolated cases at the commencement of an outbreak, or in the case of persons who have no friends or relatives to attend to them.

NOTE.—The removal of moribund patients to hospital is prohibited.

13. Where, under the circumstances stated in the explanation to the preceding rule, the District Magistrate has ordered the removal of a patient to hospital, he may also order such persons as have been in immediate contact with the patient to be removed to a segregation camp and detained under observation for ten days.

14. *Delegation of powers.*—The powers conferred by this Regulation on the Subdivisional Magistrate may, with the sanction of the Commissioner, be exercised by any gazetted officer of Government especially empowered by the District Magistrate on that behalf.

15. *Duty of compliance.*—Every person to whom an order is given by any officer empowered to act under the preceding rules with regard to any matter falling under these rules shall duly obey that order.

16. *Provision of hospitals and camps.*—The District Magistrate may make such provision as he may deem necessary for hospitals for persons suffering from plague and for camps for the detention of contacts. He may also certify hospitals and camps erected by private individuals as being fit to be used for the purposes of rules 12 and 13 of this Regulation.

17. Free access shall be given to friends and relations desiring to attend any person under treatment in a hospital established under these rules.

18. *Compensation.*—The Subdivisional Magistrate shall pay adequate compensation to any person who has sustained substantial loss or damage by reason of anything done under these rules.

NOTE.—The compensation must be liberal in all cases.

19. *Control.*—All powers conferred upon the Subdivisional Magistrate or the Subdivisional Health Officer by these rules shall be exercised subject to the general control of the District Magistrate.

20. *Expenses.*—All expenses incurred in carrying out these rules shall be paid from the District Fund or (in districts in which Bengal Act III of 1885 is not in force) from the District Road Fund or District Road Account of the district concerned.

(4) PREVENTION OF THE SPREAD OF PLAGUE THROUGH TRAVELLERS.
RAILWAY MEDICAL INSPECTION.

PLAGUE REGULATION D.

Calcutta, the 4th December 1900.

IN supersession of Plague Regulations, No. 2, dated 30th November 1897, and No. 15, dated 28th March 1899, and in exercise of the powers conferred by section 2 of the Epidemic Diseases Act, 1897, and by the Notification of the Government of India, Home Department, No. 302, dated 4th February 1897, the Lieutenant-Governor is pleased to prescribe the following rules for the inspection of persons travelling within the territories subject to the Lieutenant-Governor of Bengal, and for the procedure to be followed in the case of such persons when infected or suspected of being infected with plague.

1. *Definitions.*—In the following rules—

“Place of inspection” means any place which may be notified by the Local Government to be a place of inspection.

“Inspecting Medical Officer” means a person appointed by an order in writing by the Local Government to be an Inspecting Medical Officer, or a Subordinate Medical Officer under the direct control of an officer so appointed.

2. *Places of Inspection.*—The Local Government may notify any railway station, any ferry, any point at which a steamer touches for the purpose of landing or embarking passengers, or any place in the vicinity thereof, to be a place of inspection, and may, by order in writing, appoint one or more Inspecting Medical Officers for the same.

NOTE 1.—The only place of inspection in Bengal is—

Siliguri, on the Northern Bengal Railway.

3. *Inspection and examination.*—An Inspecting Medical Officer may at any place of inspection make a medical inspection and examination of any traveller in order to ascertain whether there is reason to believe or suspect that such person is or may be infected with plague : and may give such directions as may be necessary for promptly carrying out such inspection and examination. Every person to whom any direction is given by the Inspecting Medical Officer under the rule shall be bound to comply therewith. Examination of females shall in all cases be made through female agency.

4. *Segregation.*—An Inspecting Medical Officer may direct the removal to hospital for treatment of any traveller found by him to be suffering from plague.

5. An Inspecting Medical Officer may direct that any person who presents symptoms which may be those of plague, or who has been in immediate contact with a person found to be suffering from plague,

shall be removed to a segregation camp and detained under observation for ten days.

Notes 5 and 6 below article 11 contain directions for the detention of travellers.

6. *Procedure at places other than places of inspection.*—In places not declared to be places of inspection, the powers of an Inspecting Medical Officer under the two preceding rules shall be exercised by the District Magistrate.

7. *Disinfection of carriage.*—Any railway carriage containing a person found to be suffering from plague shall, if the Inspecting Medical Officer or District Magistrate so directs, be cut off from the train and disinfected according to the directions of the Inspecting Medical Officer.

8. *Duty of compliance.*—No person in respect to whom a direction under rule 4, 5, or 6 of these rules has been given shall leave any building, tent or other place in which an Inspecting Medical Officer has directed him to be detained, until such Inspecting Medical Officer certifies in writing that in his opinion there is no longer any reason for believing or suspecting such person to be infected as aforesaid, or that there is no longer any reason for detaining such person, as the case may be.

9. Every traveller alighting at or passing through any place of inspection shall, if called upon to do so, give his correct name and address and his place of destination to the Inspecting Medical Officer.

10. Free access shall be given to friends and relations desiring to attend any person detained in a hospital for treatment under these rules.

11. *Expenses.*—The cost of all measures taken under these rules shall be borne by the District Boards and Municipalities of Bengal in such proportion as the Lieutenant-Governor may determine.

NOTE 3.—Since 1st April 1901 the cost referred to in rule 11 has been borne by Government. (*Government order No. 236T.—P. and Circular No. 23T.—P., dated 6th June 1901.*)

NOTE 4.—Cost of removal of persons suffering from infectious diseases from Railway carriages should be met from the Magistrates' contingencies. The Railway Police should remove such persons and the Railway authorities should co-operate.—(*Government Order No. 454T.—P., dated the 26th June 1902.*)

NOTE 5.—If at a railway station which is not a place of inspection, a passenger is found to be suffering from plague before the train leaves the station, the patient should be taken on to the nearest inspection station, where he and those in contact with him should be detained and the carriage in which they travelled cut off and disinfected.

If the train from which a sick passenger has been removed on suspicion has started before his case is diagnosed as one of plague, telegraphic intimation should at once be sent by the railway authorities to the nearest inspection camp, in order that on the arrival of the train there, the passengers who were in contact with the sick person may be detained and the contaminated carriage cut off and disinfected. The railway authorities should also send the sick passenger either to the nearest inspection camp or to the nearest civil hospital which contains separate accommodation for contagious diseases, whichever course may be most convenient. The railway vehicles in which suspected or declared cases of plague have occurred should be stopped at, and not allowed to run further than,

either the station at which such cases are removed from the carriage or the nearest medical inspection station, and such vehicles shall be disinfected in accordance with the Government of India, Public Works Department Circular No. 849B.T., dated 21st April 1897 (*Government orders Nos. 114T.—P. and 439T.—P., dated respectively, the 14th May and 26th June 1900, pages 76-77 of the Plague Manual.*)

NOTE 6.—(a) Detention under observation should be confined to persons who are regarded as suspicious by reason of their appearance, or symptoms, or the dirtiness of their clothes or effects.

(b) It may also extend to persons such as pilgrims, gipsies, vagabonds, emigrants, and persons of the cooly classes, who appear for any reason to be specially dangerous.

(c) The fact that a person comes, or is suspected of having come, from an infected area is not of itself, apart from the circumstances mentioned in paragraphs (a) and (b), sufficient reason for detaining him.—(*Government order No. 5603 Medl., dated 17th December 1897.*)

NOTE 7.—“The Government of India have no hesitation in condemning the detention of the ordinary traveller because he has come from an infected area. They consider that all the precautions necessary in such cases are a summary medical examination with the object of ascertaining whether a traveller known or suspected to have come from an infected area is suffering from plague or has any symptoms that may develop into it.”—(*Paragraph 49 of the Resolution of the Government of India, No. 1789—1804, dated 16th July 1900.*)

NOTE 8.—The persons and personal effects of passengers are not to be disinfected whether they come from an infected area or not. The luggage and clothing of passengers detained under rule 4, 5 or 6 of Plague Regulation D should be disinfected.—(*Paragraph 48 of the Government of India's Resolution No. 1789—1804, dated 16th July 1900.*)

NOTE 9.—The railway tickets of all passengers leaving an infected area should be punch-marked, so that there may be no difficulty in recognizing them even by a dim light.—(*Government of India, Home Department, letter No. 48, dated the 5th January 1898.*)

NOTE 10.—In connection with the question of defining the authority of the medical officers in charge of plague-observation camps and their relation to the District Officers, the Lieutenant-Governor, has decided that the District Officer of the district in which a plague camp is situated must be the supreme local authority, the medical officer in charge of the camp being the executive officer who is responsible for the proper management of the camp and the treatment of cases. The medical officer will submit questions of medical administration direct to the Sanitary Commissioner, but in all other matters he will carry out the orders of the District Magistrate, sending to him copies of all the reports and returns which he is required to submit to the Sanitary Commissioner. The Medical Officer is not subordinate to the Civil Surgeon of the district in which the camp is situated.—(*Government order No. 6—13T.—M., dated 27th May 1898.*)

NOTE 11.—Persons holding a certificate showing that they have been inoculated by M. Haffkine's process, shall, unless they are actually suffering from plague, be exempt from detention at plague-observation camps. The certificate will be valid for six months from the date of inoculation.—(*Notification No. 5885 Medl., dated 3rd October 1898.*)

NOTE 12.—Commissioners of Divisions should inspect all plague inspection-stations in their Division at frequent intervals, and see that the inspections are carefully and intelligently conducted and are in accord with the orders of Government. (*Circular No. 26^{Med.} P., dated 27th April 1899.*)

NOTE 13.—Inspection of travellers by road and country boats is not permitted. (*Resolution No. 288^{Med.} P., dated 28th March 1899, and Government order No. 99—100T.—P., dated 27th May 1899.*)

NOTE 14.—The practice of taking down names and addresses of passengers by the police at railway stations (except inspection-stations) has been discontinued. (*Circular No. 3T.—P., dated 3rd July 1899.*)

(5) PREVENTION OF THE SPREAD OF PLAGUE BY SEA.

PLAGUE REGULATION No. 14.

Dated the 25th April 1899, as revised up to 25th May 1901.

IN exercise of the powers conferred by section 2 of the Epidemic Diseases Act, III of 1897, and by the notification of the Government of India in the Home Department, No. 302, dated the 4th February, and in supersession of Plague Regulation No. 14, dated the 1st March 1899, the Lieutenant-Governor of Bengal is pleased to declare that all vessels and persons leaving the port of Calcutta for ports out of India or for any port in Burma or the Presidencies of Madras or Bombay shall be subjected to the rules in the regulation hereinafter set forth.

NOTE.—These rules have also been made applicable to all vessels and persons leaving the port of Chittagong—(*Notification No. 155T,—P., dated the 25th May 1901.*)

RULES.

1. *Vessels proceeding to ports out of India.*—No vessel shall leave the port of Calcutta for any port out of India until she has been inspected by the Health Officer, and the Master or person in charge of such vessel has obtained from such officer a bill of health in Form A, given below, stating (1) that the Master or person in charge, officers, crew, and passengers (if any) of such vessel have been inspected by him by day on shore at the time of embarkation, and are free from infectious disease dangerous to life, and from plague; and (2) that the clothing and bedding of all third-class or deck passengers, of native servants, and of the native crew of such vessel have been disinfected on shore under his superintendence in the manner prescribed in Appendix I.

NOTE 1.—In the case of vessels of the Royal Navy and of foreign vessels of war, individual medical inspection of all persons on board is to be made by the Naval Medical Officers on board just before the ships start, the Port Medical Officer attending the inspection in order that he may be able to countersign the certificate thereof.—(*Home Department letter No. 3438, dated 26th December 1899.*)

NOTE 2.—Clean clothing supplied to the emigrants and coolies just before embarkation should be disinfected in the same way as their baggage and old clothing. To avoid delay, the clothing of the emigrants may be disinfected on the day previous to embarkation.—(*Letter to the Government of India, Home Department No. 1701—^{Med.}P., dated 15th August 1899.*)

2. *Vessels proceeding to Indian ports.*—No vessel shall leave the port of Calcutta for any port in Burma or the Presidencies of Madras and Bombay until she has been inspected by the Health Officer, and the Master or person in charge of such vessel has obtained from such officer a bill of health in Form B, given below, stating that the Master or person in charge, officers, crew, and passengers (if any) of such vessel have been inspected by him by day at the time of embarkation, and are free from infectious disease dangerous to life and from plague.

3. *Removal of infected persons.*—Should the Health Officer be of opinion that any person so inspected is suffering from plague or is not free from the infection of plague, such person shall not be allowed to embark.

4. *Disinfection.*—All contaminated or suspected articles shall be thoroughly disinfected on shore, under the supervision of the Health Officer, in the manner prescribed in Appendix I. (Annexed below.)

5. *Compensation.*—If in the course of disinfecting any clothes, bedding or other articles under rule 1, or rule 4, any damage is caused to such article, the Health Officer is authorized to pay to the owner thereof such compensation as he may deem reasonable.

6. *Fresh bill of health when necessary.*—After the Master or person in charge of the vessel has obtained a bill of health under the provisions of these rules, no person who has not been inspected and passed thereunder, and no person who, after having been so inspected and passed, subsequently goes on shore, shall be admitted on board such vessel before she leaves the port, unless such vessel is again inspected by the Health Officer of the port and another bill of health obtained from such officer by the Master or person in charge of such vessel.

NOTE.—The provisions of this rule should not be held to apply in the case of coolies and stevedores employed in loading cargo on to the vessel, who may be allowed to go on board for that purpose after the medical inspection has been made and the bill of health obtained, on the following conditions:—

- (1) That the crew and deck passengers, if any, with their bedding and apparel, are taken straight on board immediately after disinfection;
 - (2) That the gangways shall thereupon be withdrawn from the vessel and no further communication be permitted with the shore;
 - (3) That a special gangway or rope ladder shall be placed when required to allow the cargo coolies to disembark, or they may in the alternative be taken off in a launch; and
 - (4) That the shipowner or agent shall give a written guarantee that the crew and passengers shall be kept strictly away from the cargo hatches and on no account permitted to come in contact with the cargo coolies.
- (Government order No. 576 ^{Med.}/_{P.}, dated 2nd March 1901.)

7. *Port Clearance.*—(a) Except as provided for in clauses (b) and (c) of this rule, no port clearance shall be delivered to any vessel bound from Calcutta to any port out of India, or to any port in Burma or the Presidencies of Madras or Bombay, unless and until the Master or person in charge thereof shall produce the bill of health so to be obtained as aforesaid; and it shall be the duty of the Collector of Customs to refuse delivery of the port clearance without the production of such bill of health.

(b) Provided that the Collector of Customs may grant port clearance to any vessel on the Agent giving a guarantee that he will, within 48 hours after the departure of the vessel, produce to the Collector a duplicate copy of the bill of health as finally granted, signed by the Health Officer.

(c) If any Agent of a vessel who has given a guarantee under clause (b) fails to produce a duplicate copy of the bill of health as aforesaid, he shall be bound to cause the vessel to be remoored in the port of Calcutta within 48 hours after her departure.

8. *Health Officers.*—In these rules “Health Officer” means the Health Officer of the port of Calcutta, and includes an Additional or Assistant Health Officer and any person appointed by name or in virtue of his office to perform the duties of an Additional or Assistant Health Officer.

No. 1225-1230.

Extract from the Proceedings of the Government of India in the Home Department (Sanitary),—under date Simla, the 15th May 1902.

READ—

Home Department Resolution No. 1044—49-Sanitary, dated the 3rd June 1901, and reports received from Local Governments with reference to paragraph 3 of the Resolution.

Despatch to the Secretary of State, No. 58-Financial, dated the 20th February 1902.

Despatch from the Secretary of State, No. 55-Revenue, dated the 28th March 1902, regarding the scale of allowances for remuneration of Port Health Officers for medical inspection of vessels on Sundays and closed holidays.

Resolution.—In Home Department Resolution No. 1044—49, dated the 3rd June 1901, the Government of India laid down the scale of fees to be paid from the general revenues to Port Health Officers for each medical inspection on Sundays and closed holidays, of vessels leaving plague-infected ports, or arriving at clean ports from plague-infected ports and the Local Governments concerned were requested to report the receipts for the next three months accruing to the Health Officers at the various ports.

2. Upon consideration of the replies received from the Local Governments, the Governor-General in Council has decided that it is desirable to assign some pecuniary limit to the amount of the fees which a Port Health Officer may earn by special inspections. His Excellency in Council has accordingly decided, with the approval of His Majesty's Secretary of State, that no Port Health Officer shall, in any one month, receive fees aggregating more than one-fifth of his salary. In the case of Bombay, however, where the appointment of Port Health Officer is reckoned as a Civil Surgeoncy of the 1st class to which a local allowance (not included in salary) is attached, the one-fifth limit should be applied to the aggregate of the Port Health Officer's pay and allowances.

3. It will not be open to any Port Health Officer to decline to make a special inspection when required to do so at any time, simply because he may have already earned the maximum fees admissible for the month under the arrangement now sanctioned, but such officer will be required to perform the inspections as heretofore.

ORDER.—Ordered, that a copy of this Resolution be forwarded to the Governments of Madras, Bombay, Bengal and Burma, for information and guidance, and to the Finance and Commerce Department for information.

Form A.

BILL OF HEALTH.

THIS is to certify that the ship (or steamer) sailing under the flag and under the command of the _____ as Master, of _____ tons bound for _____ with a crew of _____ persons* and _____ passengers, is at the time of leaving this port in a satisfactory sanitary condition, and that no case of infectious disease dangerous to life, or of plague, exists among her officers, passengers, or crew, all of whom have been inspected by me by day on shore at the time of embarkation.

It is further certified that the clothes and bedding of all third-class or deck passengers () in number, of all native servants () in number, and of all the native crew () in number, have been disinfected on shore under my superintendence, in the manner prescribed for the disinfection of contaminated or suspected articles.

It is further certified that the town and port of Calcutta are at present† *free from* plague, epidemic cholera, yellow fever, and all other dangerous epidemic disease.

† Or as the case may be.

Form B.

BILL OF HEALTH.

THIS is to certify that the ship (or steamer) sailing under the flag and under the command of _____ as Master, of _____ tons, bound for _____ with a crew of _____ persons‡ and _____ passengers, is at the time of leaving this port in a satisfactory sanitary condition, and that no case of infectious disease dangerous to life, or of plague, exists among her officers, passengers, or crew, all of whom have been inspected by me by day at the time of embarkation.

It is further certified that the town and port of Calcutta are at present§ *free from* plague, epidemic cholera, yellow fever, and all other dangerous epidemic disease.

§ Or as the case may be.

APPENDIX I.

UNDER-CLOTHING, bedding, wearing apparel, mattresses, carpets, &c., which are contaminated or *suspected*, and other articles to be disinfected, should be exposed for fifteen minutes to saturated steam—under pressure, if possible—at a temperature of not less than 100° C. (212°F.), care being taken that the steam shall reach all parts of each article to be disinfected.

Disinfecting solutions—

(a) Solution of corrosive sublimate of 1 part in 1,000, with the addition of 10 parts of chloride of soda.

The solution should be coloured with aniline dye or indigo. It should not be placed in metal vessels.

(b) A 5-per cent. solution of pure crystallized carbolic acid, or 5 per cent. of crude commercial carbolic acid, free from tar oils, in a warm solution of soft soap.

The carbolic solutions will be useful, more particularly for disinfecting articles, such as metals, instruments, &c., which can neither be subjected to a temperature of 100° centigrade nor placed in contact with corrosive sublimate. They may also be used at ports not provided with a disinfecting stove of the prescribed pattern.

(6) PLAGUE NOTIFICATION—No. 3.

Calcutta, the 17th August 1897 (as modified up to November 1901).

IN exercise of the powers conferred by section 2 of the Epidemic Diseases Act, III of 1897, and by the notification of the Government of India in the Home Department, No. 302, dated the 4th February, and in supersession of Plague Notification No. 3, dated the 25th May 1897, which is hereby cancelled, the Lieutenant-Governor of Bengal is pleased to declare that all vessels and persons leaving the undermentioned ports in Bengal for ports out of India shall be subjected to the rules in the regulation hereinafter set forth :—

Balasore.
Chandbally.

False Point.
Puri.

RULES.

1. *Medical inspection and bill of health.*—No vessel shall leave any such port for any port out of India until she has been inspected by the Health Officer of the port, and the Master or person in charge of such vessel has obtained from such officer a bill of health in the form given below, stating that the Master or person in charge, officers, crew and passengers (if any) of such vessel have been inspected by him by day at the time of embarkation, and are free from infectious disease dangerous to life and from plague. Provided that in the case of passengers, a certificate in the form (annexed below as Appendix I) by a Commissioned Medical Officer appointed for this purpose, and dated not more than 12 hours before the departure of the vessel, shall be accepted in lieu of examination by the Port Health Officer. Such certificates shall be annexed to, and form part of, the bill of health.

NOTE.—Civil Surgeons of Balasore and Puri are appointed to examine passengers leaving the ports of Balasore, Chandbally, False Point, and Puri, respectively, and grant them certificates under this rule—*vide Circular No. 41Med., dated 21st August 1897.*

2. *Removal of infected persons.*—Should the Health Officer of the Port be of opinion that any person on board of any vessel so inspected is suffering from plague or is not free from the infection of plague, such person and all his relations and non-medical attendants shall be removed from the vessel to a plague hospital or place of observation appointed by Government, and such parts of the vessel as have been frequented by such person or his relations and attendants shall be disinfected to the satisfaction of the Health Officer. When a case which is ascertained or believed to be plague is discovered on board, the fact shall be stated in the bill of health, as well as the precautionary measures adopted.

3. *Disinfection of suspected articles.*—All contaminated or suspected articles shall be thoroughly disinfected on shore, or in the disinfection lighter, under the supervision of the Port Health Officer, in the manner prescribed in Appendix II.

4. *Fresh bill of health when necessary.*—After the Master or person in charge of the vessel has obtained a bill of health under the provisions of these rules, no person who has not been inspected and passed thereunder, and no person who after having been so inspected and passed, subsequently goes on shore, shall be admitted on board such vessel before she leaves the port, unless such vessel is again inspected by the Health Officer of the port, and another bill of health obtained from such officer by the master or person in charge of such vessel.

5. *Port Clearance*—(a) Except as provided for in clause (b) of this rule, no port clearance shall be delivered to any vessel bound from any such port to any port out of India, unless and until the Master or person in charge thereof shall produce the bill of health so to be obtained as aforesaid; and it shall be the duty of Customs Officers to refuse delivery of the port clearance without the production of such bill of health.

(b) Provided that the Collector of Customs may grant port clearance under section 66 of the Sea Customs Act on a guarantee being given by the Agents of a vessel that within 48 hours of departure they will produce a duplicate copy of the bill of health as finally granted, signed by the Port Health Officer or an Additional Port Health Officer; and that if for any reason the Health Officer should refuse to grant the bill of health, they will bring the vessel back to her moorings.

6. *Health Officers.*—The duties of Health Officers under these rules shall be discharged by the Medical Officers named below, or by such other Medical Officer or Officers as may from time to time be appointed for such purpose by the Lieutenant-Governor:—

Health Officers.

Balasore	...	Civil Surgeon.
Chandbally	...	Civil Hospital Assistant, Chandbally.
False Point	...	Ditto, Jambu.
Puri	...	Civil Surgeon.

Bill of Health.

THIS is to certify that the ship (or steamer) sailing
 under the flag and under the command
 of as Master, of tons,
 bound for with a crew of persons*
 and passengers, is at the time of leaving this port in a
 satisfactory sanitary condition, and that no case of infectious disease
 dangerous to life, or of plague, exists among her officers, passengers,
 or crew, all of whom have been inspected by me, with the exception
 of the persons named below, by day at the time of embarkation.

It is further certified that the town and port of
 are at present† *free from* plague, epidemic cholera,
 † Or as the case may be. yellow fever, and all other dangerous epidemic
 disease.

The persons named below, who are personally known to me, or
 whose identity has been proved to my satisfaction, have produced the
 annexed certificates from Medical Officers duly appointed in this behalf.

APPENDIX I.

CERTIFICATE.

I do hereby certify that I have examined
 a passenger on the ship , not more
 than twelve hours before the departure of the ship from the port of
 , and find him in good health,
 except as noted in the margin, and free from any symptoms of plague.

Rank,

Official designation.

Specially appointed under Rule I of Plague Notification No. 3,
 dated the 17th August 1897, to examine passengers leaving the port of
 by sea.

APPENDIX II.

UNDER-CLOTHING, bedding, wearing apparel, mattresses, carpets, etc.,
 which are contaminated or *suspected*, and other articles to be disinfected,
 should be exposed for fifteen minutes to saturated steam—under pres-
 sure, if possible—at a temperature of not less than 100° C. (212° F.),
 care being taken that the steam shall reach all parts of each article to be
 disinfected.

Disinfecting solutions—

(a) Solution of corrosive sublimate, of 1 part in 1,000, with the
 addition of 10 parts of chloride of soda.

The solution should be coloured with aniline dye or indigo. It
 should not be placed in metal vessels.

(b) A 5-per cent. solution of pure crystallized carbolic acid, or 5 per cent. of crude commercial carbolic acid free from tar oils in a warm solution of soft soap.

The carbolic solutions will be useful, more particularly for disinfecting articles, such as metals, instruments, &c., which can neither be subjected to a temperature of 100° centigrade, nor placed in contact with corrosive sublimate. They may also be used at ports not provided with a disinfecting stove of the prescribed pattern.

(7) PREVENTION OF THE INTRODUCTION OF PLAGUE BY SEA.

Marine Department Notification No. 36 Marine, dated the 18th March 1901, as modified up to May 1902.

In exercise of the power conferred by section 2 of the Epidemic Diseases Act, III of 1897, and by the Notification of the Government of India in the Home Department, No. 302, dated the 4th February 1897, and in supersession of all previous rules in force in the Ports of Calcutta and Chittagong, the Lieutenant-Governor of Bengal has been pleased to prescribe the following rules in respect of arrivals by sea at all ports in Bengal for the medical inspection, isolation, observation, and surveillance of persons suffering from, or suspected of being infected with, plague.

These rules shall take effect at once.

1. DEFINITIONS—

- (1) *Health Officer*.—In these rules “Health Officer” means the Health Officer of the Port, and includes an Additional or Assistant Health Officer, and any person appointed by name, or in virtue of his office, to perform the duties of a Health Officer under these rules.
- (2) *Infected ship*.—Any ship with plague on board, or on board which one or more cases have taken place within 12 days before her arrival, will be considered *infected*.
- (3) *Suspected ship*.—Any ship on board which there has been a case of plague at the time of departure, or during the voyage, but on which no fresh case has occurred for 12 days before her arrival, will be considered *suspected*.
- (4) *Healthy ship*.—Any ship, even though coming from an infected port, which has had no death or case of plague on board, either before departure, during the voyage, or on arrival, will be considered *healthy*.
- (5) *Observation*.—The term “observation” means that the persons subjected to it will be segregated in a lazaretto or isolation camp till they have obtained free *pratique*.
- (6) *Surveillance*.—The term “surveillance” means that the persons subjected to it will not be isolated; they will at once obtain free *pratique*, but, on arriving at their destination, they will be kept under medical supervision.

2. *Compliance with general directions.*—The Commander of every vessel, including buggalows or other native craft, (a) arriving from an infected port, or (b) having plague on board, or (c) on board of which one or more cases of plague have taken place within 12 days of her arrival shall, on arrival at any port in Bengal, comply with such directions with respect to hoisting a yellow flag, indicating, by signal, the port from which she has come, stopping communication with the shore, stopping the ship at any place that may be ordered, and any similar measures necessary for giving effect to these rules as may be notified by the Local Government.

3. *Inspection by Health Officers.*—On the arrival of a vessel of the classes referred to in Rule 2 at any healthy port in Bengal, the Health Officer shall, as soon as possible, visit it and make such enquiries and inspection as he thinks necessary, and may require a declaration, on oath, from the Medical Officer of the vessel (if any) or the Commander, or both, as to whether any death from or case of plague has occurred on board the vessel, either during the voyage or before its departure. He shall then class the vessel as 'Infected,' 'Suspected' or 'Healthy' as the case may be.

4. A vessel arriving at an infected port on board which no case of suspicious sickness has occurred within 12 days of arrival may notify this fact by signal. Such intimation shall *ordinarily* be accepted by the Port authorities, in which case the visit of the Port Health Officer will be dispensed with.

5. *Healthy ships.*—Healthy ships arriving at any port in Bengal shall, provided no case of sickness has occurred on board within 12 days of arrival, be given free *pratique* without further formalities.

6. Healthy ships on board of which a case of sickness has occurred within 12 days of arrival shall be given free *pratique* at once, but the passengers may, if the sickness is regarded as suspicious, be kept under surveillance for 10 days.

7. *Suspected ships.*—The crew and passengers of suspected ships will be medically inspected, and the parts of the ship which have been occupied by plague patients disinfected. Passengers who are passed as healthy will be allowed to proceed to their destination. Passengers suspected by the Health Officer to be infected with plague may be detained under observation for 10 days.

8. *Infected ships.*—In the case of an infected ship arriving at its port of destination, the sick, if any, shall be landed and isolated, the personal luggage of the crew and passengers and the ship itself shall be disinfected, and the healthy passengers shall be landed and kept under observation or surveillance for 10 days. Only those who cannot be kept under surveillance should be detained in a camp. When an infected ship touches at a port of call, the sick, if any, shall be landed and isolated, and any other persons who land from her shall be treated as above; but the ship and those who proceed in her shall be dealt with as in rule 7.

9. Any ship objecting to submit to the obligations imposed by these rules, or by orders passed under rule 2 of this Regulation, will be free

to put back to sea. Such objection must be notified on arrival at such place as may be separately directed in the case of each port.

NOTE.—No restriction should be imposed in any port in Bengal on the importation from plague-infected areas of merchandise, with the exception of rags, waste paper, and soiled linen.—(*Home Department letter No. 320, dated 7th February 1901.*)

(8) SUBSIDIARY RULES FOR THE PREVENTION OF THE INTRODUCTION OF PLAGUE BY SEA.

MARINE DEPARTMENT.

The 8th July 1901.

No. 85 Marine.—In exercise of the powers conferred by section 2 of the Epidemic Diseases Act, III of 1897, and by the Notification of the Government of India, in the Home Department, No. 302, of the 4th February 1897, the Lieutenant-Governor of Bengal has been pleased to prescribe the following rules in respect of arrivals by sea at the undermentioned ports in Bengal for the medical inspection, isolation, observation and surveillance of persons suffering from, or suspected of being infected with, plague.

2. These rules are supplementary to the rules published under this Department's Notification No. 36 Marine of 18th March 1901.

IN THE PORT OF CALCUTTA.

I. *Hoisting of yellow flag.*—The Commander of every vessel, including buggalows or other native craft, (a) arriving from an infected port, or (b) having plague on board, or (c) on board of which one or more cases of plague have taken place within 12 days of her arrival, shall, on arrival at the Sandheads, hoist a yellow flag, and indicate by signal the port from which she has come, and shall keep such flag and signal flying until permitted in writing by the Health Officer to haul it down. The Pilot on going alongside such vessel shall direct the flag prescribed above to be hoisted, if that has not already been done.

II. *Prohibition of communication with shore.*—The Commander of every vessel flying the Q flag under the conditions named in rule I shall not, without first having obtained permission as hereinafter provided, allow any communication, except orally, with the shore, or with any other vessel or boat, excepting only the boat supplying the Pilots from the Pilot brig, and in that case communication shall be limited to receiving on board the Pilot, his leadsman, servant and baggage.

N.B.—Pilotage is compulsory for all vessels over 100 tons.

III. *Stoppage at Diamond Harbour.*—If there is any case of sickness on board, and the Pilot has reason to believe that it is plague, he shall telegraph to the Health Officer from Saugor, and not proceed beyond Diamond Harbour, without the permission of the Health Officer.

IV. Stoppage at Matiabrooj.—If the Pilot has no reason to believe that there is anyone suffering from plague on board, he shall bring the vessel up the river to Matiabrooj, and shall anchor there until the Health Officer has visited it. The Pilot of such vessel shall not leave her until the Q flag has been hauled down, or until he has received permission from the Health Officer to do so. If, however, any vessel brought under this rule up to Matiabrooj is subsequently found to be suspected or infected, the Health Officer may direct her to be taken back to Diamond Harbour, to be treated there, according to rule 7 or 8, as the case may be, of the rules published under Notification No. 36 Marine, of 18th March 1901.

V. Objections against compliance with the rules.—Any vessel objecting to submit to the obligations imposed by these rules or by the rules promulgated under Notification No. 36 Marine of 18th March 1901, will be free to put back to sea ; but such objections must be notified on arrival at Saugor or at Diamond Harbour.

NOTE.—Pilgrims returning from the Hedjaz by sea should be stopped at Diamond Harbour. The District Superintendent of Police, 24-Parganas, should, in communication with the Port Health Officer, Calcutta, arrange to meet the steamer at Diamond Harbour and superintend the disembarkation and disinfection of the pilgrims under police escort. After disinfection the pilgrims for Calcutta should be brought to Sealdah and handed over to the Calcutta Police. The pilgrims for the rest of Bengal should be sent direct to their homes, and telegraphic intimation of their names and addresses sent to the District Magistrates concerned. The names and addresses of Assam pilgrims should be telegraphed to the Chief Commissioner of Assam—(*Government order No. 138T.—P., dated 14th May 1900*).

IN THE PORT OF CHITTAGONG.

I. Hoisting of yellow flag.—The Commander of every vessel including buggalows or other native craft, (a) arriving from an infected port, or (b) having plague on board, or (c) on board of which one or more cases of plague have taken place, within 12 days of her arrival, shall, on arrival at the anchorage outside the Chittagong river, hoist a yellow flag, and indicate by signal the port from which she has come, and shall keep such flag and signal flying until permitted, in writing, by the Health Officer to haul it down. The Pilot, on going alongside such vessel, shall direct the flag prescribed above to be hoisted, if that has not already been done.

II. Prohibition of communication with shore.—The Commander of every vessel flying the yellow flag shall not, without first having obtained permission as hereinafter provided, allow any communication, except orally, with the shore, or with any other vessel or boat, excepting only with the boat supplying the Pilots from the Pilot cutter, and in that case, communication shall be limited to receiving on board the Pilot,

N.B.—Pilots are not compulsory.

his servant and baggage.

III. Stoppage outside the river.—If there is any case of sickness on board, and the Pilot has reason to believe that it is plague, he shall send word to the Health Officer, and not proceed without the permission of the Health Officer.

IV. *Stoppage at Sudder Ghat Jetty*—If the Pilot has no reason to believe that there is anyone suffering from plague on board, he shall bring the vessel up to the moorings, off the Sudder Ghat Jetty, and shall anchor her there, for the purpose of being inspected by the Health Officer, no communication being held with the shore, until the Health Officer has granted pratique.

V. *Objections against compliance with the rules*.—Any vessel objecting to submit to the obligations imposed by these rules or by the rules promulgated under Notification No. 36 Marine of 18th March 1901 will be free to put back to sea. Such objection must, however, be notified on arriving outside the river and before proceeding up.

IN THE ORISSA PORTS.

I. *Hoisting the yellow flag*.—The Commander of every vessel, including buggalows or other native craft, (a) arriving from an infected port, or (b) having plague on board, or (c) on board of which one or more cases of plague have taken place within 12 days of her arrival, shall, on arrival within the limits, as officially defined, of the Ports of False Point, Balasore or Puri, hoist a yellow flag and indicate by signal the port from which she has come, and shall keep such flag and signal flying, until permitted in writing by the Health Officer to haul it down.

II. *Prohibition of communication*.—The Commander of every vessel flying the yellow flag, shall not, without first having obtained permission, allow any communication, except orally, with the shore, or with any other vessel or boat.

III. *Inspection by Health Officers*.—On the arrival, at the Port of Puri, of any vessel of the classes referred to in rule I, the examination of the crew, by the Health Officer, shall, in consequence of the high fever prevailing during most part of the year, be conducted on shore.

IV. *Infected Vessels*.—Any vessel, from Calcutta, arriving at Balasore or its subsidiary ports with a case of plague on board, will be treated as a suspected vessel, and the procedure ordered in paragraph 7 of the rules authorized in Notification No. 36 Marine of 18th March 1901 shall be adopted.

V. *Objections against compliance with the rules*.—Any vessel objecting to the obligations imposed by these rules, or by the rules promulgated under Notification No. 36 Marine of 18th March 1901, will be free to put back to sea. Such objection must, however, be notified on arriving within the limits of the port and before proceeding to an anchorage.

CHAPTER III.

EXTANT GENERAL ORDERS AND CIRCULARS REGARDING
PLAGUE MEASURES.*(1) Policy to be followed in carrying out the plague measures of Government.*

Extract paragraphs 5 and 6 from the Resolution of the Government of India, No. 1789—1804, dated 16th July 1900, on the Report of the Indian Plague Commission.

5. The measures taken by the authorities were of course designed with the one object of preventing the spread of the plague among the people and of protecting them from its ravages. But the motives of Government were constantly misconstrued. At different times rumours were widely circulated that the Government desired to poison the people, the object of its action being variously stated to be the reduction of the superabundant population, the spread of the disease in order to deter foreigners from invading India, the seizure of the people's money and property, the propitiation of the plague demon, and the permanent consolidation of British rule in India. Among other absurd rumours that were circulated was one that the intention of Government was to interfere with the religion and caste of the people, and to destroy caste and religious observances, with the ultimate design of forcing Christianity on the natives of India.

6. These rumours, perhaps natural among an ignorant and suspicious population, were, the Government of India regret to say, encouraged at different times and places by persons whose education and position made it impossible that they themselves could be ignorant of the motives of Government, and whose duty it was to assist instead of hindering the efforts by the State to save the people in spite of themselves. The fact that wide currency has been given to these misapprehensions of the motives of Government, and the universal experience that the people of infected places can and will evade measures for dealing with plague which are distasteful to them has established it as an axiom that it is hopeless to carry out effectively any system of plague administration which runs counter to the feelings, susceptibilities, and prejudices of the people. In reviewing the attitude of the people towards plague measures, the Commission observe: "One point which we particularly desire to emphasize is that measures which press with severity on the inhabitants of an infected place, as a whole, or on the friends and relatives of the patient as distinguished from the patient himself, can never be enforced in the case of a widespread epidemic by the staff available in India. The coercion of the people into compliance with regulations against plague is not a practical policy. But we believe that a great deal can be done by persuasion and by practical demonstrations of the utility of certain measures. A formidable obstacle to the recognition by the people of the necessity of enforcing measures against the plague is, indeed, to be found in the fatalism which the native of India shares with other Orientals. It

appears to us that, though an Oriental may theoretically assert that fighting against fate is useless, this belief will not prevent him from defending his life, from calling in the native hakim when ill, or from flying from an epidemic. What he does bitterly resent is to be obliged to submit to measures, the use of which he does not understand, and of which he is naturally suspicious. Signs, however, are not wanting that, among the population that has been affected by plague, the fatalistic attitude of the people towards the plague has been modified. From the evidence placed before us, we are convinced that in parts of the country the people have begun to recognize advantages of taking certain measures against the disease, and to appreciate the motives of the Government in taking steps for its extirpation." The Government of India desire to express their entire concurrence in these well considered observations. Experience has shown that public opinion, especially in towns, is apt to be equally, if not more, excited by the anticipation of unpleasant consequences from the advent of plague than by the measures actually taken to combat it when it has broken out. It is therefore essential to prepare the people beforehand by telling them as far as possible what measures they will be required to submit to. In the opinion of the Government of India much may in such circumstances be done by a strong, sympathetic, and respected district officer to remove doubts and suspicions, and to secure the co-operation of the leaders of the people in carrying out the rules. If the popular leaders are hostile or indifferent, the task of convincing the ignorant and suspicious masses will be hopeless. If the leaders of the people devote themselves to assisting the Government officials in carrying out measures which are clearly beneficial, it may often be possible, by reason of their example and attitude, to carry out with good results measures which would be ineffectual or injurious if enforced by definite orders upon a population ignorant of their advantages and suspicious of the objects with which they are adopted. Experience has, the Government of India think, made it clear that the first principle of all plague measures should be that, except in extraordinary circumstances, compulsion should be eschewed, and that the efforts of the Government officials should be directed to convincing the people of the utility of particular methods, and to inducing them to carry them out, not by force but by the exercise of their own free will and as a consequence of their appreciating and understanding the benefits to be anticipated therefrom.

(2) *Employment of force for the purpose of carrying out the evacuation and disinfection of infected houses and villages prohibited.*

No. 1468 ^{Med.}_{P.}, dated Calcutta, the 6th April 1900.

From—E. N. BAKER, Esq., Secretary to the Government of Bengal,
Municipal Department,

To—The Commissioner of the Patna Division.

THE breaches of the peace which have occurred during the past few weeks in connection with plague operations at Bukhtiarpur, Dinapore, and Chak Baeria, in the Patna district, at Chaitantola in

Monghyr, and elsewhere, have led the Lieutenant-Governor to consider to what extent it is expedient to employ force for the purpose of carrying out the evacuation and disinfection of infected houses and villages. During his recent visit to Mokameh and the surrounding villages, the Lieutenant-Governor took the opportunity to discuss this important matter with the local officers and yourself. There was a general consensus of opinion that it was undesirable to employ force for this purpose, partly because to do so prejudiced the people against the very measures by which it was sought to eradicate plague, and by alienating their confidence destroyed the hope of obtaining early information of cases; and partly because when the epidemic has spread so widely as it has unhappily done in parts of the Patna Division, a general resort to force would necessitate the employment of a far larger body of police than could be provided. The view of the officers consulted was that the efforts to secure the evacuation and disinfection of infected houses and villages should be confined to advice and persuasion, and the exercise of the moral influence which every capable district officer is able to employ; and that physical force should be resorted to only in the event of violence being used by the villagers towards Government officers in the discharge of their duties.

2. These are the views of the Lieutenant-Governor himself. Sir John Woodburn has long been convinced that to force plague measures upon the people by violence is to court certain failure. Evacuation and disinfection are the only measures which, experience teaches us, are likely to succeed in checking the spread of the disease. The former of these is familiar to the traditions of the people, and the latter, in some of its forms at least, is understood and appreciated by them. The success obtained by Mr. Lockhart in Saran in inducing the villagers near his factory to use perchloride of mercury in the solid form, with which they are said to be familiar, is an instance of what can be effected by good judgment combined with local knowledge. But if we are to press these measures on the people by compulsion, we shall inevitably excite the dislike and distrust which attach to all compulsory measures. Instead of regarding them as remedies to be welcomed and solicited, the people will look on them as penalties to be shunned and evaded. They will conceal the occasion for them whenever they can; and the moment the back of the official supervisor is turned, these measures will be instantly dropped. On the other hand, whenever the people recognize a measure as beneficial, its adoption and maintenance is assured, whether functionaries are present or not to commend its use; and for the purposes of a lasting and effectual fight with an insidious and recurrent epidemic, no remedy is of value in which the hearty co-operation of the people themselves has not been secured. However heartless at first sight it may seem, it is even better that this co-operation should be achieved through bitter lessons in a first outbreak. The co-operation will remain should a second outbreak come. What is far more important, the initiative will be taken at the next by the people themselves.

It is a subsidiary and subordinate matter which cannot, however, be wholly left out of sight that there can be no hope of providing an army of police strong enough to coerce a whole countryside in a matter affecting their daily lives.

3 The Lieutenant-Governor therefore directs that the local officers shall abstain from employing force for the purpose of carrying out evacuation or disinfection. They should persevere, with all the patience, tact, and kindness they can command, in impressing on the people the importance of resorting to these measures, and should encourage them to adopt them in every way, by advice, by persuasion, and by supplying them with materials, labour, and any other assistance that may be desired. Success may be delayed, but the cases will be few in which it will not be attained, and it is the supreme encouragement of effort in this matter that every success is followed by rapid successes all round. If any person or class of persons nevertheless finally refuse to comply, force should not be used to coerce them, and they should be left to take such steps as they may be willing to adopt.

4. These instructions do not of course apply where forcible resistance is offered to Government servants engaged in the discharge of their ordinary duties. Cases have occurred, as at Bakhtiarpur, where the villagers in unreasoning panic banded together to prevent officers from entering their village at all, and other cases have been reported in which Civil Court peons have been driven away from a village on suspicion. Violence of this kind cannot be permitted, and it could not be tolerated that District Officers and their subordinates should be refused access to any place where they had occasion to go on public business. Such cases are not likely to be common, but if they should unfortunately occur, the local officers will use all lawful measures to affirm their legitimate authority.

5. I am to request that these instructions may be communicated to all District Officers in your Division. The Lieutenant-Governor does not think it necessary to formally modify the existing regulations, but he desires that in applying them the orders now conveyed may be borne steadily in mind.

Circular No. 55—^{Med.}_{P.}

COPY forwarded to all other Commissioners of Divisions for information and guidance, and communication to District Officers.

(3) *Instructions explanatory of Plague Regulations A, B, and C.*

No. 22T.—P., dated Darjeeling, the 8th October 1900.

From—E. N. BAKER, Esq., C.S.I., Secretary to the Government of Bengal, Municipal Department.

To—All Commissioners of Divisions.

I AM directed to forward herewith, for your information, copies of the marginally-noted papers. I am at the same time to forward copies of Plague Regulations A, B and C of this date, which will be published in the *Calcutta Gazette*, and by which the existing Plague Regulations ^{No. 9}_{Nos. 10 to 13} are superseded.

2. The regulations hitherto in force were framed at a time when there had been no practical experience of plague in Bengal, and when plague measures everywhere

Report of the Indian Plague Commission on the measures for the suppression of plague. Resolution by the Government of India, Home Department, No. 1789—1804, dated 16th July 1900.

were in an early experimental stage. As experience has been gained material changes have been made from time to time in the measures prescribed, but, as a general rule, this was done by executive order, and no material modification has been made in any of the regulations.

The results of the experience which the spread of plague throughout India has afforded regarding the measures which are most successful in checking the disease have now been presented in the report of the Indian Plague Commission; and the above regulations have accordingly been revised in the light of that report and of the resolution which the Government of India have recorded on it.

3. The practice now prescribed differs in no material respect from that at present existing in Bengal. The discretion which by executive order has been left to District Officers in the administration of the rules, is now conferred on them by the rules themselves. The injunctions already issued by this Government prohibiting the use of force and pointing out the necessity and advantage of enlisting the co-operation of the people in the measures prescribed by Government have been re-affirmed by the Government of India; and this will continue to be the main principle by which District Officers will be guided in the exercise of the powers conferred on them by the rules. It will be seen that one set of rules is applied both to Calcutta and to all municipal towns with a population of 10,000 or upwards. This is in general accord with the directions conveyed in Government Circular No. 1 ^{Medical} _{Plague}, dated the 14th March 1899. The following are the leading features of the new regulations.

4. *Methods of obtaining information.*—The duty of notifying sickness or plague continues to be imposed on private individuals. The power of enforcing this duty by a legal penalty, while not formally withdrawn, is one which as heretofore should not ordinarily be exercised. Both for obtaining information of the occurrence of cases, and for exercising surveillance over persons coming from infected areas the co-operation of the people themselves is the first essential. It will be observed that the latter precaution is one to which the Government of India attach considerable importance. The duty of reporting cases of plague may be entrusted to such volunteer agencies as may be constituted under the various regulations wherever they are willing to accept it. It should not, however, be pressed upon them.

In the rules now issued provision is made for constituting special reporting agencies in rural areas, and it will be noticed that the power of making house to house visitations may be conferred upon these agencies. It will, however, only be conferred in exceptional cases, and under the special orders of Government.

5. *Measures to check plague in infected places.*—Compulsory removal to hospital and segregation of contacts are now omitted from the Calcutta rules, and are to be resorted to in mufassal towns and rural areas only rarely and in certain specified cases.

The power to employ cordons has also been withdrawn.

The policy of relying mainly on disinfection and, in the mufassal, evacuation of infected quarters is now finally affirmed by the Government of India. These measures in future as at present are to be encouraged by every means short of the use of force. Your special

attention is invited to the remarks on the subject of disinfection contained in paragraphs 36 to 39 of the Resolution of the Government of India. The Sanitary Commissioner, Bengal, has been directed to propose measures for the training of a disinfecting staff, and to arrange to supply trained men as required, who, in their turn, will train others locally.

He has also been directed to arrange for the preparation and issue to local officers of a concentrated acid solution of the disinfectant, with the vessels and directions necessary for its use.

6. Except for the points noticed above, the alterations now made in the rules call for no special comment. Certain minor provisions, which experience has shown to be unimportant, are omitted from the present rules; and they have been shortened by the omission of instructions on points of detail which may in future be taken for granted. The circulars which have been issued from this department from time to time continue in force, and the administration of plague measures under the rules now promulgated will continue to be conducted on the lines laid down in them.

DISCOVERY OF PLAGUE CASES.

(4) *Instructions of the Government of India on the subject.*

Extract (paragraph 15) from the Resolution of the Government of India, No. 1789—1804, dated 16th July 1900, on the report of the Indian Plague Commission.

15. The Commission give a brief account of the methods employed in different parts of India to maintain a watch over the health of the inhabitants of villages near to infected places, and they especially allude to the elaborate arrangements adopted in the North-Western Provinces, where about 400 square miles in the neighbourhood of Hardwar were brought under a special reporting agency. They are of opinion that it may not be possible, except as a measure of emergency, to entertain an establishment as costly as that employed in the North-Western Provinces, but they think that, where the object aimed at is the protection of a tract of country as yet only slightly infected, it will be worth while to incur considerable expenditure on an organisation of this nature in the hope of preventing the spread of plague. The Government of India approved of the system used in the North-Western Provinces in paragraph 3 of their Resolution No. 227—240, dated the 3rd February 1898, and subsequently recommended its adoption in the infected villages of the Punjab.

It has, they understand, been adopted in the eastern districts of the North-Western Provinces during the recent severe outbreak in Behar and Calcutta, and no focus of infection has been set up in the North-Western Provinces from that quarter. The infection of a large village in the Allahabad district from Bombay was reported not so early as it ought to have been under the excellent arrangements made by the Government of the North-Western Provinces, but still in time to prevent plague from spreading to other villages, and the outbreak there has been completely suppressed. The Governor-General in

Council has no hesitation in commending to Local Governments and Administrations the plan introduced by the Government of the North-Western Provinces of bringing areas which are directly threatened with plague under special reporting agency. Such arrangements indeed involve considerable expense, but the Government of India think that the results achieved through them justify the belief that such expenditure is more than compensated for by their success.

Extract (paragraph 3) from the Resolution of the Government of India, No. 227—240, dated 3rd February 1898 (referred to above).

3. One of the main difficulties which have to be contended with in dealing with the plague is the absence of any efficient organisation for the detection of cases before the outbreak has attained proportions which make it impossible to suppress it for a considerable time. Considering the extent to which fever prevails in the country and the ignorance of the agency responsible for reporting the occurrence and cause of deaths, it can hardly be expected that every case of plague will be brought to notice immediately after it has occurred, and it is very desirable that where there is any reason to suspect the existence of the disease, a regular system for the detection of suspicious cases of sickness should be devised. Rules 4 and 9 of the Bombay Rules contain directions designed to secure the detection of the disease by improving the arrangements for reporting sickness and mortality, and the arrangements for rural areas described in rules 5 and 6 have for some time past been in force in the North-Western Provinces, the Punjab, the Central Provinces, and Bengal. The occurrence of cases of plague in villages in the neighbourhood of Kankhal in the Saharanpur district of the North-Western Provinces has also led the Lieutenant-Governor and Chief Commissioner to issue orders for the employment of a special organisation for ascertaining whether it has extended to places other than those in which it has been detected. This organization is based upon that which was so successfully utilized in distributing relief during the recent famine, and the essence of it is that a sufficient number of European officers should be employed to render the powers of search effective and at the same time prevent the subordinate establishments from abusing their authority. A copy of the orders issued by the Government of the North-Western Provinces and Oudh to the Commissioner of the Meerut Division is appended to this Resolution, and the Governor-General in Council desires to commend them to the consideration of other Local Governments and Administrations in case there should at any time be reason to suspect that plague exists and has not been detected. For the purpose of supervising work of this nature, young officers of the Staff Corps will, the Government of India believe, be found to be a most suitable agency should the Civil Establishments be insufficient, and though it may not be possible to procure the service of such officers in any numbers at the present juncture, the Government of India will endeavour, should the necessity arise, to procure them from the Military authorities, when the operations at

present being carried out on the North-Western frontier have terminated.

Rules 4 to 9 of the Bombay rules referred to in paragraph 3 of the Resolution of the Government of India, No. 227—40, dated 3rd February 1898.

4. The first steps to be taken are in connection with the sickness and mortality. There are, at present, no methods in actual operation by which these can be accurately ascertained. Infectious diseases are not notified, and the registration of deaths is imperfect. Means must be adopted to improve the latter, and check the results by recording in towns all funerals which pass the octroi posts, noting the name of the deceased and the locality of the house in which the death occurred, and by posting trustworthy subordinates, either members of the Police force or of the Revenue Department, at all burying and burning grounds, noting similar information. These subordinates, not being connected with the Municipality, will afford valuable aid in checking the returns, and they will assist the Municipal authorities in arriving at correct results.

5. In villages the Patils must submit weekly returns of deaths in each village, within their respective jurisdiction, to the Mamlatdar, who will forward them to the Collector of the district, after noting on each any peculiarity in the incidence of the deaths, the mortality for the corresponding week during the past three years, and explaining, if he can, any excess. When the Mamlatdar is not satisfied as to the cause of any excessive or unusual mortality, he should cause special enquiries to be made, and, if necessary, call in the assistance of the nearest medical subordinate.

6. The Patils should also be required to give notice at the police-station of the arrival in their villages of any persons from an infected locality. The names of such persons should be entered in a register at the police-station, and they should be kept outside the village under observation for ten days, and on no account allowed to sleep within the village site. The cause of the death of any person who has recently been in an infected locality should be investigated. In villages remote from a police-station, the Police Patil should discharge these duties, but the Revenue Patil and the Kulkarni should be held equally responsible.

7. The returns referred to in paragraphs 4 and 5 will show both in towns and villages any unusual mortality over the average of previous years, and also the occurrence of two or more deaths in one house or localised area when immediate special enquiry is necessary.

8. For the discovery of cases of sickness it will be necessary to obtain the assistance of the more respectable residents in each quarter, street or group of houses. In any doubtful case of sickness, they could obtain the services of the medical subordinate attached to the dispensary, or a hospital assistant may be specially deputed to aid the residents in the work of detection.

9. It should be made obligatory under the Epidemic Diseases Act for the occupier of each room or house in an infected town to notify all cases of sickness and death occurring in the room or house occupied

by him, and for every medical practitioner practising in such a town to report all cases of sickness and death coming to his knowledge in the practice of his profession.

Orders issued by the Government of North-Western Provinces and Oudh referred to in paragraph 3 of Government of India's Resolution of February 1898.

No. $\frac{20-A}{XVI-404B}$, dated the 8th January 1898.

From—The Secretary to the Government of the North-Western Provinces and Oudh,

To—The Commissioner of the Meerut Division.

ELEVEN cases of illness believed to be plague have now been reported from the village of Jaggitpur, $1\frac{1}{2}$ miles distant from Kankhal. The discovery of a case of plague reported to-day in Ranimazra, a village 8 miles distant from Kankhal, suggests the possibility of a wider prevalence of the disease than has hitherto been suspected. For some time past men have been employed searching the villages in all the directions in the neighbourhood of Kankhal; but it is now necessary to organize on a wider basis a regular system for the detection of suspicious cases of sickness and for the treatment of villages found to be infected. Energetic measures of a far-reaching character must be at once adopted.

2. The plan which the Lieutenant-Governor and Chief Commissioner has decided to adopt is that which proved successful in distributing relief during the recent famine, viz., to place a sufficient number of European officers at the disposal of the Commissioner and to divide the tract concerned into convenient charges for each of these officers. I am to request you to at once determine the area of country to which suspicion of infection attaches, taking Hardwar as the centre of operations. Your determination of the area should be so wide as to exclude the possibility that any infected village will escape. Your delimitation should include not only villages in the Meerut Division, but also those in the adjacent districts of the Rohilkhand Division which may appear to be within the zone of infection. The search parties recently at work will no doubt be able to afford you valuable assistance in determining this area.

3. Having determined the area to be dealt with, this must be divided into plague subdivisions of a size suitable for the charge of a single officer. Two Assistant Magistrates * * * * have been deputed to Hardwar, and the Inspector-General of Police has been requested to send, as well, a selected Assistant Superintendent of Police. These three officers will be available for employment as officers in charge of plague subdivisions in addition to those already on the spot. Each Subdivisional Officer should have attached to him—

(1) an Assistant of the stamp of Tahsildar or selected Naib Tahsildar;

(2) a selected Sub-Inspector of Police; and

(3) an Assistant Surgeon or a selected Hospital Assistant.

Some clerical establishment and orderlies will also be required. Each Subdivisional Officer will be allowed a permanent advance of Rs. 500, out of which he will keep his Circle and Sub-Circle Officers in funds, submitting detailed bills when recouping his permanent advance. It may be noted that the cost of constructing segregation huts, cleaning up, &c., should be borne by the landlords and villagers themselves so far as it may be possible to effect this.

4. Each plague subdivision must be subdivided into circles, and these again into sub-circles, if necessary. Over each circle an officer of the standing of Naib Tahsildar on a pay of Rs. 50 per mensem, with a *chaprasi* on Rs. 5 per mensem, must be appointed, to be employed on plague work only. He may, if desired, be a selected Kanungo, but in that case he must be relieved of all other work. The size of each circle should not be greater than will admit of each village being visited at furthest once in three days by the Circle Officer. If the disease spreads, each circle may be divided into sub-circles in the charge of a selected patwari on Rs. 10-15 per mensem.

5. The organization above described having been effected, the officers will set to work to examine every house and every inmate of every house in every village and hamlet in the circle, care being taken that native customs are respected and that no woman who observes *pardah* is inspected by a man. The examination having once been made, and the Subdivisional Officer being satisfied that plague does not exist in the village, effective arrangements must be made, for obtaining immediate information of cases of illness and of deaths. It would be unnecessary to repeat the examination unless a village was subsequently believed to be infected. The services of the landlords' agents, the *lumbardars* and *patwaris* will be utilised as they were in the organization of village gratuitous relief. If the village inspection brings to light any suspicious cases, the procedure for dealing with them is laid down in Parts I and II of the rules issued under the Epidemic Diseases Act and in Annexure I to these rules. Copies of the rules as amended up to date will be supplied for use of the officials. It may be considered certain that no one afflicted with plague in an ordinary village houses can be properly segregated in that house, and that imminent danger to all in the house and to the neighbours exists if the sick man is not at once removed to a suitable hut outside the village, and Rule 6 (1) of the annexure may be regarded as suspended so far as concerns home segregation. Therefore suitable huts for the sick and for their attendants and friends should be constructed on a suitable shady site removed from the village, immediately on the occurrence of the first suspicious case.

6. It would, of course, be best to have the whole village, in which a case of plague occurs, evacuated until disinfected: but this may not be always possible, and the Subdivisional and Circle Officers must do the best they can, beginning with the evacuation of the house, widening the circle to the block, and, if necessary, to the whole village. When a case of plague occurs in a village, the people of the adjacent villages should be urged to place that village in quarantine and to have no communication whatever with it.

7. The Collector of the district (who must, for the present, make Hardwar or Rurki or such other place in the subdivision as may to him seem best, his head-quarters, and be in general charge of operations) will make the best use he can of the superior medical establishment, and all Subdivisional and Circle Officers shall be bound to regard the suggestions of the medical officers so far as practicable.

8. The Circle Officer (or Sub-Circle Officer) will send every evening to the Subdivisional Officer a statement showing—

- | | |
|--|--------------------------------------|
| (1) The number of villages or hamlets visited by him during the day. | } in each village or hamlet visited. |
| (2) The number of houses examined | |
| (3) The number of persons found with suspicious symptoms | |
| (4) Number of persons ill with plague | |
| (5) Number of persons (other than those shown in columns 3 and 4 segregated) | |
| (6) Number of deaths during the day | |

The Subdivisional Officer will transmit a daily abstract of these reports for his subdivision to the Collector and to the chief local medical officer having medical charge of the plague operations. The chaukidar of each village should be required to report every death or case of serious illness in his village to the Subdivisional or Circle Officer, as well as to the officer in charge of the police-station.

9. It is believed that the establishment now at your disposal for dealing with Kankhal and the surrounding country consists approximately of the officers noted on the margin. Now that disinfection work at Kankhal has lessened, some of the officers can, no doubt, be spared for other duties. You have applied to-day by telegraph for—

<i>Civil.</i>	<i>Medical.</i>
Collector.	2 Commissioned Medical Officers.
Joint-Magistrate	5 Assistant Surgeons.
1 Staff Corps officer.	28 Hospital Assistants.
1 Tahsildar.	3 Compounders.
3 Naib Tahsildars.	4 Dhais.
	10 Vaccinators.

Police.
 1 European Inspector.
 15 Sowars.
 26 Head Constables.
 130 Constables.

- 1 Tahsildar.
 2 Assistant Surgeons.
 10 Hospital Assistants.
 1 Hindu Inspector of Police.

These officers will be deputed as requested, but I am to say that the reserve of subordinate medical officers has become exhausted, and that it will be difficult to comply with further demands. After determining the extent of the suspected area and the number of circles into which it should be divided, you will be able to allot the required officers to each circle and to report by telegraph whether the present establishment requires to be strengthened in any way.

* * * * *

(5) *Organisation to be made to discover plague in rural areas.*

Extract from Government Order No. 1015Med.—P., dated 10th March 1900, to the address of the Commissioner of the Patna Division, circulated to all other Commissioners with Circular No. 86Med.—P., dated 18th March 1900.

4. I am to take this opportunity of explaining more fully the organisation which should be adopted to ensure the accurate and immediate reporting of cases. The whole district of Patna should be divided into charges or blocks, each comprising a convenient number of villages, say, 50 as an average. The precise number must depend on their size, population, and distance apart.

Each charge or block should be placed under the direct supervision of a selected officer (who should be either a European or a carefully chosen native), who should be required to make his head-quarters at some convenient place within it.

The chaukidars of the 50 (more or less) villages within the charge should be required to attend and report *every day* at certain selected convenient centres within the charge, and their reports should be submitted the same day to the Charge Superintendent. It is not sufficient that they should report only once a week at the thana.

The Charge Superintendent should arrange to visit every village under his superintendence at least once a week, and if possible once in three days. At these visits he should test the reports of the chaukidars, and should make independent enquiries to ascertain whether suspicious cases have occurred, and whether cases are being concealed.

5. Each Charge Superintendent should submit a *brief* daily report to the District Magistrate, showing the cases and deaths in each village in his charge, and stating any facts of importance which may come to his notice. He should also be employed in carrying out and supervising the evacuation and disinfection of infected houses, the construction of camps, and where required the establishment of cordons, and generally in carrying out the various measures, preventive and remedial, which have been prescribed.

6. You are authorised to engage such officers as you think fit for this purpose, and to supply them with the requisite clerical and menial staff. The cost should be met for the present at least from the funds of the District Board.

(6) *Symptoms of Plague and General Instructions.*

Extract from the rules framed by the Sanitary Commissioner for observance on the occurrence of plague in villages or small towns approved in Government Order No. 765T.—Plague, dated the 15th November 1901, *vide* Circular No. 73T.—P., dated the 15th November 1901. (*Fide* also page 56 *infra*.)

The symptoms of plague are—fever of acute and rapid onset, violent headache, severe pains in the back and limbs, and lassitude. Prostration is early and marked in the severe cases. The glands in the groin, armpit, or neck are generally swollen and tender. As a general rule, only the glands on one side of the body are enlarged. The glands in the groin are more commonly affected in males, and

those of the upper extremity in females. This is not, however, a hard-and-fast rule. The condition of the tongue is usually a good diagnostic symptom: in the early stages it is covered with white fur, the edges and tip being clean and bright red.

The great majority of people attacked by plague die of the disease. The main object, therefore, should be to keep as far away as possible from people infected with plague.

If plague exists in a village, the inhabitants of all surrounding villages should abstain from all dealings with that village till the plague ceases. They should neither go into the infected village, nor allow any person from the infected village to come into their village. In the like manner, in an infected village, a family free from the disease should not go near a house in which the disease exists.

The best way of preventing the plague from spreading is to segregate the sick person and also all the other inmates of the house in huts out in the open till he recovers or dies; and as the plague takes ten days to incubate, the attendants on the sick person should be kept apart for at least ten days after the recovery or death of the patient.

The policy of relying mainly on disinfection and, in the mufassal, evacuation of infected quarters is now finally affirmed by the Government of India. These measures are to be encouraged by every means short of the use of force.

In all cases the chief zamindars or their agents, managers of mills and mines or their agents, patwaris, and village headmen should take steps to see that these instructions are carried out without interference with the religious or social customs of the family. The village chaukidars should also give their assistance.

The signs of plague after death.—The signs of plague after death are of particular importance in deciding how the corpse should be disposed of, and whether measures should be taken for disinfecting the house and articles of furniture and clothing, which must be done if the person has died of plague. Compulsory corpse inspection should, however, never be resorted to. The object which it is designed to attain will be effected by treating, during an outbreak of plague, all deaths the cause of which cannot be determined not to be plague as deaths from plague, and by disinfecting the houses in which they occur. It will, of course, be open to any persons to voluntarily submit a dead body to the examination of a Medical Officer, if they wish to avoid the death being treated as due to plague.

In the absence of any history, or the refusal of relatives and neighbours to give any information, there are certain external evidences of the cause of death, particularly the enlargement of the glands, which are to some extent reliable. The discovery of the plague bacillus under the microscope in specimens of the blood and juices or in cultures from the same, would, of course, finally decide the question in most cases. If the position of the body has not been altered after death, it will invariably be found lying on its side with the knees flexed and the head leaning towards the chest; *rigor mortis* is delayed. There is softness and want of cohesion of the fibres of the muscles; the thumbs point towards the palms of the hands; the features have a fixed anxious expression; the eyes are sunken and muddy in aspect

with a peculiar lustre of the cornea, the pupils being dilated and the lids half closed; the tongue is swollen and coated with fur of a glistening appearance, and is clean at the tip and the edges; the fur is dry, white or yellowish brown, cleft down the centre, and horny. The complexion is opaque and dingy, the skin is dry, and if death has been recent, the forehead and hands are cold and clammy. Enlargement of the glands in one or other locality would decide the opinion that death had been due to plague.

If death occur during delirium or convulsions, there may be distortion of the features, and if the patient dies while on his back, the head is thrown to either side, and the legs are separated. Petechial spots (effusions of blood under the skin) may also occasionally be noticed. In death from pneumonic plague the body and face have a dusky bluish livid hue, sputum hangs round the lips, and the body seems shrunken and collapsed.

SEGREGATION.

(7) *Orders of the Government of India on the subject.*

Extract from paragraphs 26 and 27 of the Resolution of the Government of India on the report of the Indian Plague Commission.

His Excellency in Council desires that the removal of patients to hospital should be compulsory only in places and under circumstances where it can be carried out so completely as to render it an effectual precaution, and in the case of persons who are left without any one to look after them or who have no home. But every effort should be made to induce patients to go voluntarily to hospital, and to lessen the aversion to hospitals by the means enumerated by the Commission, viz., by encouraging the establishment of private and caste hospitals, by locating hospitals near to infected quarters, by limiting the size of hospitals, so that patients may receive more individual attention, and accommodation may be more readily made available for their immediate families and friends, by arranging for the provision of an adequate number of medical attendants and nurses, and of ample and comfortable accommodation for patients, and by permitting at least two friends to be in attendance on each patient, so that the patient may never be left alone.

27. The Government of India have already prohibited the removal of moribund patients to hospital. They do not consider it humane to forcibly remove from his house a person who has not a fair chance of recovery, and this should never be done, except at the express wish of the friends of the patient. They consider that the risk of leaving in his house a patient whose case is so serious that the medical officer thinks he has not a fair chance of recovery is not great since, as the existence of the case will have become known, there will be no difficulty in carrying out measures of disinfection during the progress of sickness (if necessary), or after death.

(8) *Bengal Government orders regarding segregation in Calcutta.*

Extract paragraphs 5 to 7 from Bengal Government, Municipal Department, Resolution—No. 1145 Med., dated 24th February 1899.

5. The Lieutenant-Governor has also had under consideration the question of revising the regulations for dealing with plague in Calcutta itself. Those now in force are contained in Plague Regulation No. 9, dated 10th November 1897, and were drawn up with reference to the experience which had been gained in Bombay and elsewhere, before any case of plague had occurred in Calcutta. In substance the Lieutenant-Governor sees no reason to doubt their propriety and efficacy. In some points of detail, however, later experience has suggested improvements. In order that effective measures may be taken to prevent the spread of infection, it is of the first importance that every case which occurs shall be promptly brought to the notice of the authorities. Foreign Governments would have just cause for complaint if the measures adopted locally were such as to lead to the concealment of cases; nor can the Local Government hope to cope successfully with an outbreak if the regulations in force are so repugnant to the sense of the people affected as to drive them to withhold information and hide away their sick instead of bringing them forward for treatment. Experience has shown that success has attended the system prescribed in Rule 46 of Plague Regulation No. 9, by which persons found to be suffering from plague are, at their discretion, permitted to resort to ward, caste, or family hospitals, maintained by private contributions, instead of being removed for segregation to the special plague hospitals at Maniktala, Marcus Square, and the Budge-Budge Road. Still more satisfactory has been the arrangement frequently resorted to by which persons are permitted to set apart portions of their dwelling or garden-houses, under due restrictions, for use as private hospitals for themselves and their families. In the case of the poorer classes, however, the arrangements have not worked so well. It is amongst the poor that the majority of the patients has usually been found; and any system is defective which leads these ignorant and superstitious people to resort to any shift rather than expose themselves to the chances of compulsory removal to a plague hospital or segregation camp.

6. The Lieutenant-Governor is therefore of opinion that measures must be taken to apply in the case of the poorer classes also the system which has so far worked well in respect of classes higher in the social scale. In future no person shall be removed to a public hospital under Rule 46 of Plague Regulation No. 9 without his consent, provided that suitable arrangements are made for the treatment of the case at home. If there is any ward, caste, or family hospital for admission to which he is eligible, and to which he is willing to go, he may be moved thither. If there is no such hospital available, an endeavour should be made to explain to the patient or his friends the advantages which he would obtain in a public hospital in respect of treatment, attendance, and surroundings. But if, notwithstanding this, he still prefers to be treated at his own home, arrangements shall be made to adapt the latter for the purposes of a private isolation hospital. The other inmates, except such as are in attendance on the patients, should be

induced to remove elsewhere. Medicines and medical attendance should be provided free of cost, and on the recovery of the patient (or after his death, if the case should terminate fatally) the premises should be either thoroughly disinfected, or, if necessary, demolished, compensation being paid to the owner. All clothing or bedding which is likely to have become contaminated should also be at once disinfected in the Equifex disinfector or destroyed on payment of compensation. If any structural or internal alterations in the house or hut appear necessary in order to render it suitable for its purpose, these shall be carried out by the Chairman and the Health Officer at the public expense.

7. By these measures the Lieutenant-Governor hopes to secure the active co-operation of the public in the reporting of cases promptly as they occur.

(9) *Bengal Government orders regarding segregation in mufassal.*

Circular No. 1 Medical
Plague, dated Calcutta, the 14th March 1899.

From—E. N. BAKER, Esq., Offg. Secretary to the Government of Bengal.
Municipal Department,

To—All Commissioners of Divisions.

* Now superseded by Regulations A, B & C.

I AM directed to invite your attention to* Plague Regulations Nos. 10 to 13, dated the 8th February 1898, which prescribe the measures to be taken to prevent the importation or spread of plague in urban and rural areas. By Rule 7 of Regulation No. 10 and Rule 7 of Regulation No. 12 it is laid down that sporadic cases of plague which may occur shall be dealt with under the rules contained in Regulations Nos. 11 and 13, which thereupon come into force so far as is necessary for the purposes of such cases. The principal measure prescribed by these Regulations is segregation both of the sick and of persons who have been in contact with the latter; and detailed instructions for carrying this out are laid down in Rule 6 of Regulation No. 11 and Rule 5 of Regulation No. 13. These measures proved conspicuously successful in the Backergunge district, where a small but virulent outbreak was completely stamped out in September 1898. It was found that the villagers willingly assisted the authorities in carrying out the necessary measures, isolating the persons attacked and their families, and destroying the huts, clothing, bedding, &c., which had become infected.

2. If any case of plague should occur in any of the districts of your Division, in a rural area, or in any small country town with a population of not more than 5,000, the Lieutenant-Governor desires that the steps prescribed in the Regulations cited above may be taken. In these places the means of segregation are easy and simple, and experience has shown that, with tactful management, the people fall in readily with the desired arrangements with good results. In such localities the people should be encouraged to provide private camps or hospitals for themselves, and every possible facility should be given them for this purpose. It is not necessary that these should be of an elaborate

nature. Any arrangement which provides efficiently for the evacuation of an infected house or village, for the isolation of the sick and for attendance on them, and for the segregation of contacts should be freely sanctioned. If a sporadic outbreak is grappled with firmly and effectively at the outset, experience shows that there is a good chance of stamping out the infection and preventing it from taking root.

3. In larger towns, with a population exceeding 5,000, the circumstances are somewhat different. In such places as Howrah, Patna, Gaya, and Dacca, the practical difficulties in the way of effective segregation are great, if not insuperable, and the Lieutenant-Governor considers that in these four towns the measures to be taken should be similar to those recently laid down for Calcutta in Resolution No. 1145Medl., dated the 24th ultimo. As regards all other towns with more than 5,000 inhabitants. Government must rely on the local knowledge and discretion of the Magistrate and Commissioner as to whether the rules for rural areas shall be enforced, or whether the modified rules prescribed for Calcutta and other large cities shall be applied in whole or in part. In exercising the discretion vested in them, the local officers should have great regard to the existence of vacant spaces, and to the opportunities which are afforded for making segregation effective, and also to the attitude of the people themselves. Wherever the habits of the people have become distinctly urban and the means of segregation are not easy and simple, the enforcement of rural rules will probably lead to the alarm and concealment which, with the object of getting at and checking the disease, it must be the first endeavour of the authorities to avoid. The decision therefore as to the proper action to be taken in such towns requires much circumspection and local knowledge, and will probably be best taken in frank consultation with the leading residents.

EVACUATION.

(10) *Orders of the Government of India on the subject.*

Extract (paragraph 34) from the Resolution of the Government of India on the report of the Indian Plague Commission.

34. The Commission examined the results of evacuation in the light of the statistics which they collected from different centres of infection, and were able to apply several statistical tests of its efficacy. The result was on the whole favourable to the system. But in forming their opinion the Commission did not rely solely on statistical evidence. They also attached great weight to the almost unanimous opinion in favour of evacuation given by the many officials and non-officials whom they examined on the subject. The Government of India agree with the Commission that this strong body of opinion affords most important evidence of the value of evacuation, and they have themselves been struck with the frequency and emphasis of the remarks in favour of evacuation contained in many reports received from different parts of the country. The Governor-General in Council accepts fully the conclusions of the Commission that evacuation is generally beneficial,

that it is highly beneficial when the safeguards necessary for securing the best results can be maintained, and that it is beneficial even when they cannot be completely maintained. In certain seasonal conditions, however, evacuation will not be beneficial. The evidence given to the Commission regarding the results of evacuation in the Satara and Dharwar districts during heavy rain shows that evacuation as carried out under these conditions has no sensible effect in checking the outbreak of plague, whilst it subjects the inhabitants to great distress and misery. The Government of India concur with the Commission in thinking that climatic conditions are a most important factor in determining whether evacuation can be carried out or not, and that before subjecting the people to the discomforts of evacuation during the rainy season, there should be no doubt that the hardships inflicted on them will, in all probability, yield a balance of advantage.

(11) *Bengal Government orders regarding evacuation.*

Extract from Government Order No. 590Med.—P., dated 20th February 1900.

Para. 3. The Lieutenant Governor desires that all possible influence should be exercised by the officers of Government, and especially on zamindars and the principal people of villages, for the adoption of the method of evacuation. All experience shows that evacuation is the only effective method for checking the spread of the disease, and its value and efficacy are shown in the result that wherever it has been adopted plague has disappeared.

In rural areas, where the majority of the dwellings are huts of a comparatively poor character, and where it is not possible to provide for efficient chemical disinfection, it is advisable that portions of the roofs of such huts should be removed (this can be done with no structural injury to the huts and at small cost), and the people induced to remain away from them until the process of desiccation is complete. How long this takes depends upon the extent to which the houses are opened out and the nature of their materials. If the unroofing is complete, ten days will ordinarily suffice—(*Circular No. 73T.—Plague, dated the 15th November 1901.*)

DISINFECTION.

(12) *Recommendations of the Indian Plague Commission regarding disinfection and the orders of the Government of India thereon.*

Extract (paragraphs 36 and 39) from the Resolution of the Government of India on the report of the Indian Plague Commission.

36. In the section of the report dealing with the subject of disinfection the various agencies which operate in the direction of

destroying the germs of plague when these have been disseminated by nature are described, and the efficacy of each of them and the tests by which it may be determined are examined. The various methods of disinfection that have been used in India are next surveyed and criticised, and finally the Commission make a series of suggestions for improving disinfection operations in the future. The whole section is of very great importance, and should be carefully studied by all persons engaged in the conduct of plague measures. The majority of the Commission had little doubt that "where skilled and efficient control was exercised as in the operations carried out under the personal supervision of Captain James, I.M.S., and other European officers in the Punjab, of Colonel Fawcett, R.A.M.C., and Major Ross conjointly in Poona, and of Mr. Winter and his staff in the North-Western Provinces, chemical disinfection exerted preponderating influence in destroying the infection." The President does not agree with this opinion, and considers that the effect of chemical disinfection has been exaggerated, while that of opening up the roofs and walls of houses has not been sufficiently appreciated by the other members of the Commission. The evidence taken by the Commission leaves no doubt that chemical disinfection has often not been carried out in a way to secure the best results. In a circular dated the 4th July 1899, the Government of India drew attention to the need for improving the methods of disinfection, and circulated a set of simple instructions prepared by their Sanitary Commissioner. The issue of this circular has no doubt produced improvement, but the Governor-General in Council fears that there may still be defects in the system of disinfection in use in some places. It is of the highest importance that they should be removed. Imperfect disinfection involves waste of energy and material, brings discredit on the system by exhibiting unsuccessful results, and engenders a false sense of security with regard to localities which have been incompletely disinfected and still contain the living germs of plague. The conclusions of the Commission are summed up in a series of suggestions which are of such great value that the Governor-General in Council thinks it desirable to reproduce them in full. They are as follows :—

"(I) Firstly, as to the agency. We would recommend that the general scientific direction of the disinfecting operations and the arrangement of technical details, such as the making up of the disinfecting solutions and similar matters, should be committed to a member of the Sanitary Service, the establishment of which is recommended in a subsequent chapter of this report. We think, further, that the officer who is actually placed in charge of the disinfection operations should possess, at any rate, a certain elementary knowledge of the properties of the chemical disinfectants employed and of the disinfecting agency of heat, desiccation, and sunlight in their application to plague. We think this is of cardinal importance, inasmuch as in our opinion many of the technical errors which have been noticed above as having been committed in the course of disinfecting operations are directly imputable to the fact that these operations were, in most cases, not placed under any scientific direction, but were placed under

officers who, being quite new to the work, had to begin almost at the beginning and to find their way by a system of trial and error. The necessity for employing a strong and capable supervising staff wherever chemical disinfection is undertaken will be manifest, in view of the facts which have been placed before us in evidence with regard to the ignorance and negligence of the subordinate disinfection staffs.

"(II) In connection with the disinfection operations, as distinguished from the agency, we may consider first the question of the disinfection of houses.

"The actual burning down of houses seems to us a practice which should be resorted to only in the case of temporary structures which are of little or no value, or in the case of houses which are unfit for human habitation.

"Owing to the risk of infection from the blowing about of the floor dust, and owing to the fact that it is practically impossible to secure that the whole material shall be carried away, we think that the digging up of the floors, with a view to kiln-burning them, ought not to be resorted to.

"Similarly, the complete unroofing of houses, with a view to exposing the interior to the disinfecting agency of sunlight, appears to us to be a needlessly drastic measure for effecting an object which could be brought about by chemical disinfection more expeditiously without any destruction of property and with at least as much success. That neither chemical disinfection nor any of the more drastic measures, which involve the unroofing and the prolonged vacation of houses, can be absolutely relied on in every case entirely to extinguish all the infection contained in houses will be clear on a consideration of the instances cited in the section of our report which deals with the infectivity of houses.

Chemical disinfection ought, we think, to be resorted to wherever possible. Of all the measures of disinfection it is the only one which, when effectively carried out, immediately destroys the infective material present in a room, and renders the room at once practically safe for re-occupation. It must, however, carefully be borne in mind that a disinfecting room, though it has been rendered fit for immediate re-occupation, is liable to be reinfected by the agency of rats or men."

The views just stated are not shared by the President. Professor Fraser indeed considers that "it is probable that disinfection by chemical substances is useful as an auxiliary to disinfection of houses by other agencies, and especially by sunlight and air, for it is reasonable to suppose that a solution of an efficient disinfectant would prove more serviceable than water alone in reducing the dangers that are incurred during the opening up of houses; and there is sufficient evidence to show that disinfection by chemical substances is the only convenient method of freeing from plague-infection many of the personal effects of patients and other articles in infected houses." But in view of the statements frequently made in evidence that the construction of a large proportion of native houses is such as to render effective disinfection by chemical substances an operation of so great difficulty as to be practically impossible, and that the provision of sufficiently skilled and constant supervision is unattainable, he considers that

there are serious difficulties in carrying out chemical disinfection, and that even if these difficulties could be overcome, a house so disinfected remains as dangerous for occupation after the process as it was before it, for the infected rats would enter the rooms and re-infect them on the first opportunity. In so far as adequate unroofing, whether complete or partial, of a house unprovided with sufficiency of outside openings is a necessary part of the process of disinfection, by the agencies of light and air, it does not appear to the President to be in accordance with the evidence to characterize it as a "needlessly drastic measure," and in his opinion the difficulties connected with the efficient application of chemical disinfectants, and the uncertainties as to what is required to ensure the death of the bacillus in earth and cow-dung floors, give further support to the value and importance of utilizing the disinfecting actions of sunlight and the free access of air which, he observes, "experience has amply shown to be effective for the purpose."

"(III) We would recommend that the disinfection operations should in towns be restricted to the actual houses in which either plague cases have occurred or dead rats have been found; where dead rats have not been found we are of opinion that, in the case of houses containing a number of unconnected families, only the room or rooms which have been occupied by plague patients should be disinfected; while in the case of houses containing only one family, disinfection should be applied to the whole of the house.

We would recommend that the disinfectant should be applied in ordinary cases only to the floors and to so much of the walls as is in reach of the disinfectors, and to all recesses and places which might have served for the reception of infected clothing. We do not think it is necessary to take any measures with regard to the upper part of the walls, or to the ceilings, or to the roofs of houses. It is true that in exceptional instances infective material may have been deposited by rats in the roofs, especially in the mud roofs of village houses—but we would urge that the devitalisation of such infective material, deposited as it is in places which are not readily accessible to man, might quite safely be committed to the agency of desiccation, which will, as we have seen, bring about this devitalisation without any assistance on the part of the disinfectors. The impossibility of compassing by artificial means the devitalisation of every plague bacillus, and the expediency of committing that devitalisation in all cases where it is safe to do so to the disinfecting agencies of nature, are considerations which ought, we think, to be constantly present in the mind of the disinfectors.

"(IV) The chemical disinfectant which seems to us, under present conditions of knowledge, to be most likely to render efficient service is perchloride of mercury, which may for the purpose of securing complete solution be made up either with hydrochloric acid or with common salt or any other soluble chloride. In view, on the one hand, of the fact that solutions of 1 in 5,000 and 1 in 10,000 are capable of devitalising the plague bacillus, and, on the other hand, of the fact that the plague bacilli, at any rate in a house where the floor has not been freshly recovered with cow-dung, may be expected to lie on the surface of the floor, we think that it will not be necessary to exact that the solution employed shall be sufficiently concentrated to exact a disinfecting action

down into the substance of the cow-dung floor as far as the solution penetrates. We think that in lieu of impregnating the whole floor with a solution of perchloride of mercury in a strength of 1 in 75—the minimum concentration which Dr. Marsh's experiments would seem to indicate as necessary for this purpose—a sufficient margin of safety would probably be provided for if a solution of not less than 1 in 1,000 were employed. The evidence of actual experience in Poona and elsewhere, where an acid solution of this strength was employed, would seem to confirm the inference that a solution of this strength is sufficient.

While provisionally recommending that no change should for the present be made either in the disinfectant or in the strength of that disinfectant at present widely adopted for use, we would again insist that the question as to which is the cheapest effective disinfectant and as to what is the minimum strength of that disinfectant which may effectively be employed still awaits resolution. As said before, we think this question could be resolved by experiments conducted on the lines of those instituted by ourselves.

“(V) In connection with the procedure adopted for chemical disinfection, we think the following points ought to be carefully insisted upon:—First, where perchloride of mercury is employed as the disinfecting agent we think that this disinfectant should be made up by some responsible authority in the form of a concentrated solution in acid. Clear instructions ought to be issued with the disinfectant as to the amount of water to be added. With a view to securing that the dilutions prescribed should be the dilutions in which the disinfectant shall actually be employed, we would insist on the necessity of providing that the capacity of the vessels used for measuring out the perchloride of mercury solution shall be accurately adjusted to that of the wooden buckets in which that solution is diluted for use. We think that the buckets employed should be of such capacity as to hold just the quantity of water sufficient to dilute the measure of concentrated solution to the desired degree.

With regard to the actual means of applying disinfectants, we would suggest that the methods pumping and throwing them over the walls by means of dippers or other vessels, and of sprinkling them over the household effects with the hands, which methods are at present very widely resorted to should be abandoned in favour of a system of pouring the disinfectants over the floors and vigorously brushing down the walls with the disinfecting solutions. We make this recommendation in view of the fact that—as shown by certain experiments which we instituted—the disinfectants rapidly run off from smooth, and specially from greasy, walls, without effecting their disinfection.

Before beginning the disinfection of a house or a room, we think, and this is in accordance with the practice which actually obtains, that all the household effects and such furniture as there is should be cleared out and should be placed in the open. When the room itself has been dealt with, the effects ought to be taken in hand. Suggestions as to the procedure to be adopted with regard to these are made below. As soon as their disinfection has been completed, the household effects ought to be replaced, and as soon as the rooms are dry, the inhabitants ought to be allowed to return. It seems to us that, in cases where the disinfection has been carried out with due care, there is, nothing to be gained

either from a subsequent process of white-washing or from keeping the houses vacated. The appropriate remedy to apply in cases where the disinfection process has been negligently carried out is not to resort to a less effective disinfectant, such as caustic lime, or to a slower disinfective agency, such as the agency of desiccation, but to do the chemical disinfection over again.

“(VI) In cases where it is not possible to carry out chemical disinfection—and cases where it may not be possible to carry out the measure are sure to occur at any rate in villages—the disinfective agency of desiccation should be relied upon. For this purpose the house ought to be thoroughly cleaned out. The removal from the house of cow-dung and other moist accumulations should be particularly insisted upon, since these will, by giving up moisture to the air, tend to prevent the destruction of the plague bacillus by desiccation.

We are of opinion that the breaking of holes in the roof or walls and partial untiling will not accelerate the process of desiccation to such a degree as to counterbalance the damage done to the house. While this holds true generally, we think there may be occasions, as for instance when the rains are imminent, when every means of accelerating desiccation may be reasonably adopted.

The President, for the reasons expressed elsewhere, is unable to concur with the opinion that ‘the breaking of holes in the roof or walls and partial untiling will not accelerate the process of desiccation to such a degree as to counterbalance the damage done to the house.’

In view of the general tenor of practical experience in the past, and in view of recent observations, which show that under favouring circumstances the plague bacillus, when incorporated in moisture-retaining and close-textured materials, may preserve its vitality for long periods, we think that it would not be an unwise measure to allow, as at present, an interval of at least two months of dry weather to elapse before authorising the re-occupation of the house; in damp and cold climates—and, needless to say, during the rains in India—we think that disinfection by desiccation cannot be relied on.

“(VII) We have above, in considering the attitude of the people towards the disinfection of their household effects, referred to their aversion to have their goods and clothes disinfected, and to the endeavours which they make to secrete or convey away clothing and other property. There is reason to believe that infection was in this manner often spread to those who became the depositories of clothing removed from infected houses. This difficulty makes it a matter of particular importance to consult, so far as possible, the feelings of the people in the carrying out of the disinfection of the personal effects. The difficulty cannot, we think, be met by any system of giving compensation for goods destroyed. It can, however, we think, to a large extent, be met by proscribing all destructive methods of disinfection. In particular, we would recommend that nothing which could by any possibility have any value for its owner should be broken up or destroyed by fire.

“(VIII) We have already pointed out that mere momentary immersion in boiling water will, so far as the plague bacillus is concerned, effectually sterilise any infected object. It would, therefore, suffice to boil a cauldron of water, and, while keeping up a brisk fire underneath, to immerse in it the various infected objects. A

an alternative to this momentary immersion in boiling water, the infected clothing might, as we saw was the practice in the Punjab and in Poona, be steeped in a solution of disinfectant. The acid solution of perchloride of mercury, which has been recommended for the disinfection of houses, would, since it would injure the clothing, not be a suitable disinfectant to apply. It would therefore be necessary to make up as was, for instance, done in Poona, in addition to the solution of perchloride of mercury required for the disinfection of the houses, a neutral solution of the same disinfectant for the disinfection of the clothes. All complications such as this are, however, liable to lead to error and confusion unless, perhaps, when all the disinfecting operations are carried out under the immediate supervision of trustworthy Europeans.

“(IX) We do not think that the procedure of conveying clothes to a distance, to a central steam-steriliser, to undergo sterilisation, is a procedure which is to be recommended. In general we think that steam-sterilisers, in view of the fact that they can be relied upon to do their work only when they are placed in the hands of intelligent and perfectly trustworthy persons, are not suitable for general application in India. In most cases the required disinfection can be more simply and equally effectively accomplished by the means recommended above. On the other hand, we recommend that the steam-sterilisation of the effects of native crews and native ship-passengers which is now carried out should be continued.

“(X) Where dealing with fabrics which might be injured by immersion in boiling water—we have in view here in particular such articles as valuable silks—these might perhaps be disinfected by exposing them to the direct rays of the sun. In accordance with what we have seen above, a very prolonged exposure—an exposure possibly of several days—would be required to effectually secure the devitalisation of the plague bacillus. During a prolonged exposure, even if the rays of the sun failed to penetrate the fabric, the infective material would inevitably be devitalised by desiccation.

“(XI) Lastly, in connexion with the disinfection of village houses and shops, we have to consider the question as to what steps can be taken with respect to stocks of corn which may possibly have become infected by the agency of plague-stricken rats. We think that inasmuch as chemical disinfection is inapplicable, and inasmuch as disinfection by firing is out of the question, the destruction of the plague bacilli which may eventually have been conveyed into these stocks must of necessity be committed to the agency of desiccation. We think that the present method of spreading the corn out in a thin layer in the sun is a very appropriate measure, not so much because it brings into operation the direct devitalising effect of the sunlight, but because it conduces to a more complete desiccation.

“(XII) We think very little indeed is to be gained by the disinfection of the persons of travellers: we therefore recommend that this should be abandoned. We base this recommendation on the consideration that it is unreasonable, at the price of the infliction of considerable personal hardship, to attempt the destruction of the infective material which may conceivably be carried about on the persons of travellers when it is quite impossible to provide against the much greater danger

of plague being carried about by persons who are in the incubation period of plague, and when it is impracticable, in the case of railway passengers, as will be shown later on, to take any effectual measures to compass the destruction of the infective material which may be carried about in their personal baggage.

"(XIII) We may next consider the question of the practical utility of applying measures of disinfection to drains, cess-pits, and latrines. The question, in so far as it relates to drains and cess-pits, is for all practical purposes resolved by the facts which have been referred to above in connexion with the disinfection of filth by the ordinary processes of nature. The case of latrines is somewhat different, inasmuch as the infective material deposited in these places might possibly spread from person to person before the disinfecting agency which is brought into play by the growth of the saprophytic organisms has had time to effect the devitalisation of the plague bacillus. It will, therefore, be advisable to continue the disinfection of latrines."

37. The Government of India think that the advice of the Commission just quoted is generally excellent, and they are convinced that, if it is carefully followed, the process of disinfection will be made easier and more efficient and at the same time less unpopular than it is at present. With reference to the remarks of the President on the subject, they would observe that recent experience in Calcutta, where the isolation of the sick has not been carried out, testifies unmistakeably to the complete efficacy of chemical disinfection unaided by unroofing or otherwise opening up the house if it be properly carried out. Major Deane, R.A.M.C., has recently reported that "the facts observed in Calcutta proved conclusively the uselessness of attempting isolation and segregation in preventing the spread of the disease, and point strongly to extensive disinfection as the measure alone likely to be attended with a modicum of success." The Government of India have only a few remarks to make with regard to the different suggestions made by the Commission. It is not necessary in this Resolution to notice the proposal for a sanitary service mentioned in the first suggestion, since the Government of India have not yet received the detailed recommendations of the Commission upon it. Local Governments should issue instructions to their Sanitary Commissioners for the better training of the disinfecting staff. It is essential that disinfection should be carried out by a trained agency, and experience shows that, where the area of infection is so great that a trained staff cannot be spared for all the infected villages, it is better to rely on gradual desiccation rather than on a process of disinfection which is likely to be incomplete and ineffective. The Governor-General in Council will be glad to receive in due course reports describing the means adopted in provinces where plague measures are being carried out to provide a more adequate staff of trained disinfectors. With reference to the third suggestion, the Governor-General in Council observes that experience in Calcutta tends to show the advantages of disinfecting not only the house or rooms actually infected, but also houses adjoining infected ones. His Excellency in Council is therefore not able to agree with the view that disinfection in town should be restricted to the houses in which either plague cases have occurred or dead rats have been found. Under the

head of the fourth suggestion the Commission observe that the question, as to which is the cheapest effective disinfectant and as to what is the minimum strength of that disinfectant which may effectively be employed still remains to be solved, and that this can only be done by means of experiments on the lines of those described in paragraph 83 of this chapter of the report. The Government of India will be obliged if the Local Governments of Bombay, Bengal, and North-Western Provinces and Oudh will make arrangements for the prosecution of such experiments in the bacteriological laboratories at Bombay, Calcutta, and Agra. Local Governments should issue instructions for the carry-out of the fifth suggestion regarding the preparation of a concentrated acid solution of the disinfectant, the issue of directions about its dilution, and the provision of vessels for measuring the solution of capacity accurately adjusted to that of the buckets in which the solution is diluted for use. The Governor General in Council desires to draw particular attention to the sixth suggestion regarding measures which may be taken to lessen the objections which the people at present have to the disinfection of their effects. His Excellency in Council regards this suggestion as most important.

38. With reference to the President's views regarding disinfection by opening up the roofs and walls of houses, the Governor-General in Council is of opinion that this is seldom necessary in the case of masonry houses with concrete roofs. As a rule, such houses can be disinfected without great difficulty, while they are, to a certain extent, open to light and air. In rural areas, where the majority of the dwellings are huts of a comparatively poor character, it will rarely be possible to provide for efficient chemical disinfection. The removal of portions of the roof of such huts can be done with no structural injury to the huts and at small cost, and the Governor-General in Council thinks that it will be a prudent precaution to unroof such huts, and to induce the people to remain away from them for a period of at least two months until the process of desiccation is complete. While His Excellency in Council considers that this plan should continue to be resorted to in rural areas, he accepts the view of the majority of the Commission that chemical disinfection is a far more efficient measure in towns and other places where trained disinfectors can be employed, and efficient supervision exercised over the preparation of the disinfectant, and its application to the building to be disinfected.

39. In the concluding portion of the section the Commission advert to the question of the disinfection of merchandize. Experiments in the laboratory, and practical experience alike, tend to show that little danger is to be apprehended of the spread of plague by ordinary articles of merchandize. The Commission point out that it would not, in the case of any variety of merchandize, be practicable to employ any method of disinfection certain to bring about immediate devitalisation of any plague bacilli which might chance to have been introduced into the material, and that the only possible precaution which could be taken against the accidental conveyance of infection by merchandize would be to insist that merchandize should be received for transport only when it is thoroughly dry. Security for this is already in large measure afforded by commercial and economic reasons, inasmuch as

merchandize would, if shipped damp, inevitably undergo deterioration in transit. In view of these considerations, the Commission are of opinion that it is neither advisable nor necessary to take any steps towards the disinfection of ordinary merchandize. The Government of India have always acted on the same view, and the only restriction with regard to commodities that is at present enforced in India is a prohibition against the import from infected localities of rags, waste paper, and soiled linen. The regulations with regard to rags and waste paper have already been relaxed, under suitable precaution, where their strict enforcement would interfere with the paper-making industry.

(13) *Training of a disinfecting staff and preparation of disinfectant solution.*

Circular No 23T.—P., dated Darjeeling, the 22nd October 1900.

From—E. N. BAKER, Esq., C.S.I., Secretary to the Government of Bengal, Municipal Department,

To—All Commissioners of Divisions.

IN continuation of this office Circular No. 22T.—P., dated the 8th October 1900, I am directed to say that the following arrangements for the training of a disinfecting staff and for the preparation of a concentrated acid solution of the disinfectant have been proposed by the Sanitary Commissioner and approved by Government.

2. Each Civil Surgeon should without delay proceed to instruct the Assistant Surgeons, Civil Hospital Assistants, Inspectors and Sub-Inspectors of Vaccination subordinate to him in the methods of disinfection prescribed in the Resolution of the Government of India and in the Report of the Indian Plague Commission.

3. If plague should occur in any district, an Assistant Surgeon or Civil Hospital Assistant should be placed in general charge of disinfection operations, and be entrusted with the duty of seeing that the solutions are correctly made up and that the executive staff are properly trained for the work they have to do. He should also be required to supervise in person as many disinfections as possible.

4. The concentrated solution required for disinfection should be prepared by dissolving half an ounce of perchloride of mercury in one ounce of (commercial) acid hydrochloric. For use, this solution should be diluted in ordinary *unglazed gumlahs* or *chatties*. The use of glazed *gumlahs* is objectionable, owing to the effect of the acid on the glaze. One ounce of the concentrated solution should be added to 3 gallons of water; for vessels holding only $2\frac{1}{2}$ gallons, 6 drachms of the solution should be added. To obviate the necessity of manufacturing *gumlahs* locally, each holding 3 gallons, it will be sufficient to provide each disinfecting party with a kerosine tin measured and marked for 3 gallons. The water from the tin should be poured into the *gumlah* or *chatti*, and the disinfecting solution then added. On no account whatever should the perchloride solution be poured into the kerosine tins. The *gumlahs*, &c., after use should be destroyed and compensation paid if necessary.

It is hoped that the people will take readily to the use of these earthenware vessels, with which they are familiar, and which can be

found in every household. Every facility should be given to the people to carry out the disinfection of their houses themselves *under supervision*, the perchloride solution being measured out and supplied to them as required.

5. Civil Surgeons should report to the Sanitary Commissioner after one month from the receipt of this circular the names of the officers trained in disinfection work and the nature of the instructions given to them.

(14) *Sanitary Commissioner's instructions regarding the method of disinfection.*

Extract from Government order No. 765T.—Plague, dated 15th November 1901—*vide* Circular No. 73T.—P., dated 15th November 1901. (*Vide* also page 40 *supra*.)

7. Perchloride of mercury solution should be used in preference to other disinfectants. The strength of the solution should be 1 in 1,000 with the addition of 2 per 1,000 of hydrochloric acid, and a little aniline blue or other colouring matter. The solution of perchloride of mercury should be prepared in concentrated form, and specific directions should be given on the labels of the vessel containing it to show the amount of the concentrated preparation necessary to make a solution of 1 part of perchloride in 1,000 in strength, on the addition of 1 gallon or other convenient quantity of water. Great care must be taken that the proper dilution is always observed, and that the solution is not stored in a porous receptacle or brought into contact with metal. To make concentrated perchloride of mercury solution, dissolve half an ounce of perchloride of mercury in 1 ounce of hydrochloric acid. The solution should be coloured with a little aniline blue or other colouring matter. The necessity for doing so is that it is a violent poison, and as such must be distinguished from water. The bottle containing it should also be labelled "Poison." It will be convenient to prepare 12 ounces at one time by dissolving 4 ounces of perchloride of mercury in 8 ounces of hydrochloric acid, and to store it in a 12-ounce bottle having 12 equal marks measuring 1 ounce each. One mark, *i.e.*, 1 ounce, of this solution added to 3 gallons of water will dilute it to the strength of 1 in 1,000. An earthen *gumla* or *chali* should be used for the purposes of dilution, and should be broken after use. A bucket or tin which can hold 3 gallons of water should be procured for measuring the water. Care should be taken that it is used *only* for measuring out the water, and never for the purpose of diluting the solution.

8. Disinfection may be divided under three headings, *viz.*—

- (a) Disinfection of houses and household effects.
- (b) Disinfection of personal effects.
- (c) Disinfection of the person.

9. *Disinfection of houses and household effects.*—On opening the house, a stream of the perchloride solution should be poured by means of a syringe (if a syringe is not available, it can be splashed with the hand) through the door over the furniture, and as much of the walls as can be seen from the door. This lays the dust and renders entry to the house comparatively safe. The house may then be entered, and the

The practice of colouring the disinfecting solution is in very few places observed, and Government deprecates the introduction of any innovation in this respect. (Cir. No. 44 Med. P., dated the 8th Aug. 1902.)

walls, ceiling, and everything within reach thoroughly covered with the perchloride solution till they are wet and dripping. On no account should sweeping the floor or dusting be allowed to be carried out as a preliminary measure in disinfecting an infected room. The furniture should be collected in one place and thoroughly disinfected, piece by piece, by means of the solution. Clothing should be collected and disinfected by boiling. Worthless articles should be burnt at once.

After thorough disinfection of the furniture, it should be placed outside to dry in the sunshine.

Each room, passage, staircase, etc., should be systematically cleansed in the same way.

There may be certain parts of a room that require special treatment.

If the floor is of earth, it should not be dug up, but should be thoroughly saturated with the perchloride solution.

If the floor is of earth mixed with cowdung, it should be saturated with acid perchloride solution of double strength, *i.e.*, 2 per 1,000 of perchloride and 4 per 1,000 of hydrochloric acid. Two marks, *i.e.*, 2 ounces, of the concentrated solution added to 3 gallons of water will make dilution of the required strength. Sometimes wooden and stone walls or articles of furniture are covered with a greasy coat of dirt through which no solution will penetrate. After such a coating has been thoroughly irrigated with the perchloride solution, it should be scrubbed with a hot 5 per cent. solution of carbolic acid and soft soap.

All crevices and cracks should be thoroughly syringed out with the perchloride solution.

In rural areas, where the majority of the dwellings are huts of a comparatively poor character, and where it is not possible to provide for efficient chemical disinfection, it is advisable that portions of the roofs of such huts should be removed (this can be done with no structural injury to the huts and at small cost), and the people induced to remain away from them until the process of desiccation is complete. How long this takes depends upon the extent to which the houses are opened out and the nature of their materials. If the unroofing is complete, ten days will ordinarily suffice.

10. The disinfection of a house is attended by some danger to those who do the work, but this may be minimised by suitable precautions—

- (a) Disinfecting gangs should be inspected daily, and no one who has any cut or abrasion of the skin should be allowed to go out with the gang.
- (b) Shoes should always be worn inside infected houses.
- (c) Workmen should, if possible, have special clothing to wear while disinfecting, and this should be taken off at night and the body cleansed with water.
- (d) Each workman should be warned of the danger of inhaling dust, and enjoined to avoid raising it, to wrap a fold of his *puggri* round his mouth when entering a house, and to lay the dust by means of the perchloride spray as soon as possible.
- (e) The hands of workmen should be protected from the effects of the carbolic solution and limewash by the plentiful application of oil.

- (f) Whenever they stop working, the workmen should wash their hands thoroughly outside the infected locality.
- (g) No food or drink should ever be taken within an infected place, and *hooka*-smoking in such a place should be prevented.

11. *Disinfection of personal effects.*—The disinfection of clothing, etc., should be carried out by means of moist heat either in an apparatus specially constructed for the purpose or in a boiler. When a boiler is used, care must be taken that each article is completely immersed and exposed to the boiling temperature for not less than ten minutes. It must not be forgotten that the temperature of the water will be lowered whenever a fresh article is plunged into it. Clothing and bedding of small value should be burnt, and adequate compensation should be paid to the owner. Leather and other articles which would be damaged by exposure to moist heat must be immersed in a disinfecting solution, or thoroughly scrubbed with a 5 per cent. carbolic acid solution and soft soap.

12. *Disinfection of the person.*—For disinfection of the person reliance must be placed upon soap and warm water; but there is no objection to the additional use of any weak disinfectant which will not injure the skin.

13. Each Civil Surgeon has trained his Assistant Surgeons and Hospital Assistants, as well as Inspectors and Sub-Inspectors of Vaccination in the work of disinfection. They will be in general charge of disinfection operations in any district where plague may occur, and should be entrusted with the duty of seeing that the disinfecting solutions are correctly made up, and that the executive staff are properly trained. On the occurrence of a case of plague in any place, intimation should at once be sent to the Civil Surgeon of the district, in order that he may take prompt and necessary action in the matter.

14. *Disposal of the corpse.*—The corpse of a person known or suspected to have died from plague should be disposed of by the friends in accordance with the usual customs. In case of cremation, the body should be completely burnt in an isolated place. In case of burial, the body is to be buried at least six feet deep. The place of burial should be well away from habitations and sources of water-supply.

(15) *Quarantine and Cordons.*

Extract from the Resolution of the Government of India, Home Department,
Nos. 227—240, dated 3rd February 1898.

9. It seems to the Government of India desirable to express their views upon the subject of quarantine in relation to the suppression of plague. Her Majesty's Government and the Government of India have continuously been opposed to the view that the spread of epidemic disease can be effectively checked by the imposition of quarantine so as to prevent the movement of the people to other places from areas in

which epidemic disease prevails. The first reason which has led the Government of India to this conclusion is that it is impossible to make any system of land quarantine in India effective. It could, indeed, be arranged that every traveller by railway should, on leaving the infected area, be placed in a segregation camp for a given time, but any attempt to block all the roads and paths from the infected area must be defeated, firstly, because the Government has not at its disposal the necessary establishments to make such a stoppage of the traffic effective, and, secondly, because the establishments could not be relied on to carry out the duty. But even could it be made effective, a system of land quarantine would, in the opinion of the Government of India, be mischievous in itself and calculated to foster rather than to suppress an outbreak of epidemic disease. It is in appearance so easy a remedy that, if adopted, it would be apt to distract attention from those surer and most essential measures which, if plague is to be suppressed, must be taken at the place where the outbreak occurs. It causes hardship and suffering to the people who have to be detained, and it affords opportunities of every kind for bribery, blackmail, and extortion to the subordinate establishments employed to enforce it. The collection in camp of large bodies of people who have previously been subject to the risk of plague infection involves danger of an outbreak of the disease in the camp, and may thus establish fresh foci for the dissemination of the disease. The views held by the British Government and the Government of India on the subject of quarantine were for a long time resisted on the Continent of Europe, but they have now been accepted by the European Powers; and in the Dresden Conference of 1893, to which the Government of India declined to become a party for other reasons, the usefulness of land quarantine was for the first time recognized by them in respect of cholera. Prior to the assembly at Venice in the spring of 1897 of the delegates deputed to concert measures to prevent the introduction and spread of the plague in Europe, the Governor-General in Council had considered and rejected a proposal to place in quarantine the whole of the Bombay Presidency owing to the outbreak of plague within it against the rest of India. In paragraph 3 (iii) of the Home Department letter No. 1623—26, dated 1st June 1897, addressed to the Maritime Governments, it was noticed that the Venice Convention provided that the modern principles of disinfection should be substituted for the obsolete system of land quarantine, but, with a view to the protection of countries which may find it difficult to thus protect their borders, each of the Governments who are parties to the Convention is at liberty to close its frontiers to travellers and merchandise. The Convention also, while condemning land quarantine in general terms, permits Governments to reserve to themselves the right to take special measures with regard to certain classes of people, specially—

A.—Gipsies and vagabonds.

B.—Emigrants and persons travelling or crossing the frontier in large bodies.

10. Preceding on the principles embodied in the Venice Convention, the Government of India have from time to time expressed

an opinion adverse to the establishment of cordons designed to keep the population within an infected area, and have declined to agree to the general prohibition of the booking of passengers by railway to or from particular places, or to the prohibition of the booking of passengers travelling by a particular class. The detention of the inmates of an infected locality within the area of infection by means of a cordon is apt to increase the virulence of the disease, and therefore also the danger of its dissemination, by fostering the local conditions which are a main cause of its development. Experience shows that ordinarily on the outbreak of plague in a town of which part is infected and part is not, it is desirable, concurrently with the removal to a segregation camp of the inmates of the infected localities, to encourage the healthy population to leave the infected area before the disease becomes thoroughly diffused through it. But there may be cases in which the area of infection being small, it may be possible to entirely evacuate it, and to place the inmates of it in isolation at a place in the near neighbourhood. A guard may unobjectionably be utilized to keep the population under medical supervision within the healthy area in which it is determined to isolate them, both with the object of preventing their return to the infected houses and also to minimise the possibility of infection being carried elsewhere. In such cases if proper arrangements are made for separate camps for the sick, the suspected, and the healthy, there is little or no danger of establishing a *focus* for the dissemination of the disease, while the control of the guard can be made effective and malpractices on the part of the subordinate establishments be prevented if European agency is employed on the spot to supervise such establishments, and to check, by a system of registering the inmates of the camps, the attempts which may be made to leave them.

11. In accordance with the principles explained above, the Government of India have restricted the interference with the movement of the general public by railway to medical inspection. In the terms of the Venice Convention medical intervention is restricted to the inspection of travellers with a view to the detention of those who show symptoms of plague and to the care of the sick. The Convention also dwells on the desirability of keeping under supervision all travellers from an infected area at their homes for a period of ten days from the date of their departure from the infected area. The Government of India approve of the medical inspection being conducted so as to provide for the detention in the observation camp provided for this purpose not only of persons in whom symptoms of plague or suspicious symptoms are discovered, but of all persons from the infected area who appear to be suspicious by reason of their appearance, the dirty condition of their clothes, the fact that they are travelling in gangs or belong to classes which are likely to disseminate the disease or cannot be traced on arrival at their destination or depended upon to give information should plague occur among them after arrival at their destination. All other persons should be allowed to proceed to their destination after inspection, and the rules should not, under any circumstances, exempt from their operation any class of persons as such, or be limited to persons who travel by railway by a particular class.

12. While these are the general principles which should guide the different Local Governments and Administrations in their control over the movements of the general public travelling by railway from an infected area, it may often be advisable to interpose special checks either on the movement of pilgrims from an infected area to a place of pilgrimage beyond that area, or on the movement of pilgrims to a place of pilgrimage at which plague exists. When plague exists at a place of pilgrimage, it may, indeed, be generally the most prudent course, as well as the course which will in the end cause least interference with the people, to definitely prohibit the religious fair at which the pilgrims intend to collect. But there may be special circumstances in which this course may seem to be inadvisable, and in such cases it appears to the Government of India that the booking of pilgrims to the place of pilgrimage or the neighbouring railway stations may be, without objection, entirely interdicted for the time. Where, on the other hand, the place of pilgrimage lies outside the infected area, and it is ordinarily visited by pilgrims from the infected area, it is legitimate and advisable to prohibit for the time the passage by railway of pilgrims from the infected area to the place of pilgrimage, and in accordance with these considerations, the Government of India have from time to time, during the outbreak of plague, issued orders prohibiting the sale of tickets in the Bombay Presidency to pilgrims desirous of visiting other parts of India.

ORDER.—Ordered, that a copy of this Resolution be forwarded to Local Governments and Administrations, and to the Foreign, Public Works, and Military Departments.

Extract (paragraph 51) from the Resolution of the Government of India on the Report of the Indian Plague Commission.

51. The Commission conclude the section of the report which deals with the measures to prevent the spread of plague by an examination of the efficacy of cordons. During the early period of the epidemic numerous attempts were made to prevent the spread of plague by means of cordons drawn round infected localities. This measure has come to be less resorted to, as experience has shown that it could not be made effective. The Government of India were from the first opposed to the practice, and they explained their reasons at length in the Home Department Resolution of the 3rd February 1898. They were convinced that such cordons could not be made successful, and they also considered it unwise and improper to detain the inmates of an infected locality within the area of infection. The principle of such a course is diametrically opposed to the successful policy of evacuation. The Commission, after passing in review the evidence regarding cordons examined by them during their investigation, arrived at the conclusion that, in the circumstances which exist in India, cordons cannot be made an effective means for preventing the spread of plague. The Governor-General in Council concurs with this view, and directs that cordons be no longer employed as a means of preventing the spread of plague. This prohibition will not extend to the employment of guards to

prevent people from attempting to re-visit sites which have been evacuated in consequence of plague before it is considered safe for them to do so.

(16) *Bengal Government orders withdrawing the power to employ cordons.*

Extract from Circular No. 22T.—P., dated 8th October 1900.

Para. 5. Compulsory removal to hospital and segregation of contacts are now omitted from the Calcutta rules, and are to be resorted to in mufassal towns and rural areas only rarely and in certain specified cases.

The power to employ *cordons* has also been withdrawn.

(17) *Examination of Corpses.*

Extract (paragraph 23) from the Resolution of the Government of India on the Report of the Indian Plague Commission.

23. Upon a review of the whole case the Government of India are of opinion that the compulsory examination of dead bodies is a very unpopular measure; that its object is always likely to be defeated by dead bodies being thrown out of houses as at Bangalore; that it could only be effectively and thoroughly carried out, even during outbreaks in large towns, with establishments which it would be impossible to provide, and that, even if every dead body were examined, the fact that it had been examined would afford no greater security than every house in which a plague death has occurred would be disinfected than a system of assuming that every death, the cause of which cannot be established, was due to plague, and requiring the house in which it occurred to be disinfected. The examination of dead bodies would, on the information before the Government of India, appear to have been conducted at Poona more completely and continuously than at any other place. Yet it did not enable the authorities to detect the outbreak in the early part of 1899 until it has passed beyond the stage at which it could be suppressed; nor did it furnish them with such information as to enable them to prevent it from being in its subsequent stages most violent and widely distributed throughout the city.

Compulsory corpse inspection has, as has been observed above, been prohibited recently in the Bombay Presidency, and it is not now resorted to as a plague measure in any place in India. The Government of India direct that it shall not be utilised again in any part of India. The object which it is designed to attain will be effected by treating during an outbreak of plague in towns, all deaths the cause of which cannot be determined not to be plague as deaths from plague, and by disinfecting the houses in which they occur. It will of course be open to any persons to voluntarily submit a dead body to the examination of a Medical officer if they wish to avoid the death being treated as due to plague.

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(18) *Inoculation.*

Resolution of the Government of India (Home Department—Sanitary—Plague), Nos. 462—477, dated Calcutta, 22nd February 1900.

READ—

- (1) Home Department Resolution No. 4360--74, dated the 11th November 1898.
- (2) The Report of the Indian Plague Commission on Mr. Haffkine's anti-Plague Inoculation.

Resolution.—The complete report of the Commission appointed by the Government of India, with the approval of Her Majesty's Secretary of State in November 1898, to make a scientific inquiry into various questions connected with the epidemic of plague in India, is not yet ready for publication, but the Government of India have received that portion of it which deals with Mr. Haffkine's system of anti-plague inoculation, and it is now published for general information.

2. The report summarizes a searching inquiry into the composition and preparation of the vaccine, the possibility of effecting improvement in the method of preparing it, the physiological results of inoculation, its preventive and curative effect, the attitude of the people towards it, and its place in the administration of plague preventive measures. The examination by the Commission of the materials which came before them is of a very minute and detailed character. It would not be of advantage for the Governor-General in Council to recapitulate the arguments and conclusions of the Commissioners, but some broad facts emerge therefrom to which His Excellency in Council thinks it desirable to draw the attention of the public.

3. The Commission observe that the essential points in an anti-plague vaccine are, *firstly*, that it shall be capable of preventing and favourably modifying attacks of plague; *secondly*, that it shall be capable of conferring an effect which will last some time; and, *thirdly*, that it shall be capable of producing these good results without entailing any evil consequences.

4. The Governor-General in Council thinks it desirable to refer to the last point first. The investigations of the Commission make it clear that fear of injury or disease from the use of Mr. Haffkine's vaccine need not be entertained. After careful inquiries in the various centres where anti-plague vaccinations have been performed, the Commission found the statement that serious ill consequences have resulted from them to be unsupported by any evidence. A fear of inoculation has been produced at some places owing to persons who, before being inoculated, appeared to be quite healthy having died suddenly in a few hours after inoculation. The Governor-General in Council thinks it important to draw public attention to the opinion which the Commissioners have expressed as to these cases. "We have come to the conclusion," they remark, "that these cases are not to be imputed to any defect in the anti-plague vaccine. In addition to the fact that they have been quite isolated occurrences, there is the fact that no such cases of death have been reported to us as having occurred in two or more persons who were inoculated with the same vaccine. These cases of sudden death have always occurred at a time when plague cases were

actually occurring, while they have not occurred in the absence of a plague epidemic. We are, therefore, of opinion that such sudden deaths are probably imputable to the fact of the inoculation having been made into a person who had already contracted the infection of plague." There is thus no ground whatever for asserting that death has resulted from inoculation against plague. The Commissioners also observe: "In the overwhelming majority of cases no evidence was adduced to show that any injurious effects had supervened upon inoculation." In a few isolated cases, indeed, abscesses had occurred at the seat of injection, but it is not certain that these abscesses were imputable to the condition of the vaccinating material. There have also been, in some instances, long-continued reaction at the seat of inoculation, and considerable fever. But the cases in which these results have been observed have not been numerous, and the Government of India think that it can safely be said that a person in good health may subject himself to inoculation without any fear of the consequences.

5. The greater portion of the report is occupied with the discussion of the evidence regarding the extent to which the preventive and curative effects of the vaccine have, in practice, been established. The Commissioners found it necessary to discard the data which were placed before them regarding the inoculation of certain groups of persons. They have expressed, in the two tables printed in paragraphs 68 and 70 of their *ad interim* report, the statistical results of their inquiry as deduced from the data which they considered to be suitable for the purposes of comparison. The first table relates to the effect of inoculation in preventing, and the second to its effect in modifying an attack of plague. These tables, they observe, "show that in every case, except that of Bulsar, inoculations had a considerable effect in warding off plague attacks from the inoculated, and that in every case, without exception, they rendered attacks among the inoculated less fatal than attacks among the uninoculated."

6. The Commission have summarized the results of their critical study of the nature and effect of Mr. Haffkine's vaccine in the following terms.—

"I.—Inoculation sensibly diminishes the incidence of plague attacks on the inoculated population, but the protection which is afforded against attacks is not absolute. On the one hand, plague has attacked persons who have undergone inoculation as many as four times in the course of two years previous to their attack. On the other hand, as many as 8 per cent. of the inoculated population may suffer from plague, as was the case in Bulsar. Many varying influences have been at work in determining the rate of attack in different places, and it is impossible to give a numerical expression for the measure of protection against attack which inoculation confers.

"II.—Inoculation diminishes the death-rate among the inoculated population. This is due not only to the fact that the rate of attacks is diminished, but also the fact that the fatality of attacks is diminished. Here, again no numerical expression for the amount by which the death-rate is diminished can be given.

"III.—Inoculation does not appear to confer any great degree of protection within the first few days after the inoculation has been

performed. This fact, we may note in passing, has an important bearing on the risk of infection which would be incurred by recently-inoculated persons if they were left behind in surroundings so plague-infected as to render their evacuation by the uninoculated desirable.

"IV.—Inoculation confers a protection which certainly lasts for some considerable number of weeks. It is possible that the protection lasts for a considerable number of months. The maximum duration of protection can only be determined by further observation.

"V.—The varying strength of the vaccine employed has apparently had a great effect upon the results which have been obtained from inoculation. There appears to be a definite quantum of vaccinating material which gives the maximum amount of protection; and provided that this quantum can be injected in one dose, and provided also that the protection turns out to be a lasting one, re-inoculation might, with advantage, be dispensed with. The best results of inoculation will only be obtained after an accurate method of standardization has been devised."

The Government of India, therefore, regard it as established that inoculation sensibly lessens the liability to plague, and greatly increases the chance of recovery from an attack of the disease.

7. The Commission have drawn attention to several important matters in connection with possible improvements in the preparation of the vaccine. The question of the proper standardization of the dose appears to the Government of India to be very important. The normal dose is $2\frac{1}{2}$ cubic centimetres, but the average dose injected has been $7\frac{1}{2}$ cubic centimetres, and the dose has been at times as high as 20 cubic centimetres. It is very desirable that the dose should be reduced, both because with a smaller dose the work of inoculation will become much less laborious, and also because the reduction in its volume will diminish the inconvenience to the person inoculated. It is also, the Government of India think, essential that there should be no possibility of the vaccine becoming contaminated either in the laboratory or after it has been distributed for use. The appended report by Major Bannerman, dated the 18th July 1899, gives an account of improvements carried out in order to protect the vaccine from contamination. The precautions now taken render it very unlikely that the vaccine will be contaminated in the laboratory, but the adoption of the suggestion made by the Commission that it should be re-sterilized at a temperature of 60 C. after it has been sealed up in the bottle would give still greater security. This question and that of the standardization of the dose are the most important matters which have to be dealt with in the Plague Laboratory at Parel. In order to prevent the possibility of the contamination of vaccine while in use, instructions should be issued to all persons employed on inoculation that, after a bottle has been opened and only a portion of its contents actually used, the remainder should be invariably thrown away. Another point on which His Excellency in Council desires to lay special stress, is that the actual operation of inoculation should only be entrusted to trained and reliable persons, and that supervision should be exercised over them to ensure that they use sterilized implements. The Commission suggest that, with a view to remove any possible ground for distrust as to the

conveyance of disease by inoculation from one person to another, the syringe should be sterilized in the presence of the person about to be inoculated. The suggestion commends itself to the Government of India, and it appears to them desirable that all persons employed in performing inoculations should be provided with a spirit lamp for sterilization by holding the needle or the syringe in the flame. In one important matter a discovery has been made since the Commission made their inquiries. Major Bannermam, I.M.S., has recently succeeded in preparing an effective anti-plague vaccine by growing the bacilli of plague in a medium manufactured from wheat, thus avoiding the use of any other than purely vegetable substances. A letter describing the experiments is appended to this resolution.

8. In summing up the attitude of the people towards inoculation, the Commission state that hitherto the principal motive which has induced individuals to come forward to be inoculated has been the desire to obtain exemption from the inconveniences of the plague measures ordinarily applied, rather than that of protecting themselves against an attack of plague. They express the hope that, when the beneficial effects of inoculation are more widely known, native opinion may be won over to its favour, and they allude to the valuable assistance towards bringing about this more satisfactory state of affairs, which can be rendered by influential persons among the native communities. With regard to the possibility of adopting a general policy of inoculation, the conclusions of the Commission are as follows :—

- “(1) Experience gained hitherto has shown that it is very seldom possible to get a large proportion of the inhabitants of an uninfected place inoculated.
- “(2) It has been possible, where the inducement of exemption from segregation and eviction has been offered, to get a large proportion of the inhabitants of an infected place inoculated quickly.
- “(3) It has been possible in one place, Mysore City, even where no inducement that touched the great mass of the people could be offered, to get a considerable proportion of the inhabitants of an infected place inoculated quickly.
- “(4) It has been possible also to induce a large proportion of particular communities, such as the Khojas of Bombay and Karachi, to be inoculated under the influence of their leaders.”

9. The Governor-General in Council accepts the opinion of the Commission that inoculation should be encouraged wherever possible, and in particular among disinfecting staffs and the attendants of plague hospitals. His Excellency in Council is not without hope, now that the benefits of inoculation have been clearly established by an independent inquiry that people will be more ready to be inoculated than they have hitherto been. It is, in the opinion of the Governor-General in Council, most important to make special efforts to encourage them to be inoculated in places which, either owing to their nearness to plague-infected places, or to their having previously suffered from an outbreak

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of plague, appear to be specially threatened with a visitation of the disease. His Excellency in Council trusts that in places so situated no efforts will be spared to explain to the people the advantage of becoming inoculated before the disease is among them. At the same time, His Excellency in Council adheres strictly to the principle, which he has continuously enjoined, that the choice whether or not they will be inoculated must be left entirely to the people, and that compulsion must on no account be resorted to. An ample supply of the vaccine, prepared in the most careful possible manner, should be placed within the reach of the inhabitants of plague-infected and plague-threatened localities, and every facility should be afforded to them for becoming inoculated. It is to be hoped that the more enlightened members of the communities will succeed in explaining to their less-educated brethren the strong hope of immunity from plague, which is afforded by inoculation and will induce them to accept more freely the protection which it offers.

10. The Governor-General in Council has read with pleasure the tribute which the Commission pay to Mr. Haffkine's work in connection with anti-plague inoculation. His Excellency in Council desires to take this opportunity of publicly expressing his appreciation of the energy and enthusiasm with which Mr. Haffkine attacked a most difficult problem, and of cordially acknowledging the valuable service which he has rendered both to the Government and to the people of India.

ENCLOSURE.

From MAJOR W. B. BANNERMAN, M.D., I.M.S., to the Chief Secretary to the Government of Bombay, General (Plague) Department, dated Bombay, the 18th July 1899, No. 5096.

IN continuation of this office letter No. 1682, dated 31st March 1899, I have the honour to report on certain measures that have been taken to lessen still further the chance of any contaminated bottles being despatched from this laboratory.

In the second paragraph of the letter above referred to it is noted that "arrangements are now made, according to the above results, in order to ensure security from this source of error," i.e., the use of improperly-sterilized bottles. Since then 539 brews have been tested, representing 161,700 doses, with the result that a proportion of 8.1 per cent. have been found contaminated. This result will doubtless be much improved when the laboratory is established in the new quarters at Parel.

These results have been obtained in flasks which have been, of necessity, standing on the floor of the fermentation room for some months, and which have been exposed, during the process of decanting, to unavoidable draughts.

These two sources of error will, of course, be removed in our new laboratory.

The mode of sterilizing the bottles has been changed with improved results. They are now placed in a hot-air sterilizer in which a temperature of 150 C. (302° Fah.) is maintained for three hours. As the corks cannot be exposed to dry heat of this temperature, the bottles are plugged with cotton and the corks treated separately. The corks are now placed in large flasks full of water and boiled under a pressure of one atmosphere (14 lbs.) for one hour on three days in succession. The water in which they are boiled is then poured off and the flasks are filled with a 5 per cent. solution of formalin. The large flasks having narrow necks, one or at most two corks only can reach the surface of the fluid at one time, so that any chance of aerial contamination is reduced to the lowest possible limit. To make sure that no organisms are adhering to the corks when bottles are being closed, the corks are, before insertion, plunged into paraffine wax, boiling at a temperature of 300° Fah. (141 C.). This effects the double purpose of

immediately destroying any organisms that may be attached to the corks and of coating the corks with an impervious layer of wax, so that the fluid in the bottle cannot act upon them. The top of the bottle is then securely covered with paraffin paper tied tightly round the neck, the whole being again dipped into paraffine, so as to render the bottles completely air-tight.

Ten days after bottling, one bottle of each brew is opened, and tested, before any of the other bottles of that brew are despatched. The result of this retesting is what is now reported.

It will, I think, be evident that all precautions are now taken to ensure that no contaminated bottles be sent out for use, so that medical men having occasion to use the vaccine may do so with the utmost confidence. As public confidence was at one time considerably shaken in the aseptic condition of the fluid, I would suggest that means be taken to make the above result known to the public.

I would request that a copy of this letter be sent to the Director-General, Indian Medical Service, for his information.

(19) *Bengal Government orders directing how and when inoculation is to be introduced in any area.*

Circular No. 35 ^{Medi.}_P, dated Calcutta, the 8th March 1900.

From—E. N. BAKER, Esq., Secretary to the Government of Bengal,
Municipal Department,

To—All Commissioners of Divisions.

I AM directed to forward, for your information and for communication to District Officers in your Division, a copy of a Resolution of the Government of India, Home Department, Nos. 462—77, dated the 22nd February 1900, reviewing that portion of the report of the Indian Plague Commission which deals with Mr. Haffkine's system of anti-plague inoculation.

2. In paragraph 9 the Government of India accept the opinion of the Commission that inoculation should be encouraged wherever possible, and that in places which are threatened with a visitation of plague, no efforts should be spared to explain to the people the advantage of becoming inoculated before the disease is among them. It is at the same time strictly enjoined that compulsion must on no account be resorted to, and that the choice whether or not they will be inoculated must be left entirely to the people.

3. I am to say that before any steps are taken to make the Resolution public or to offer facilities for inoculation, the utmost circumspection should be observed. In the Patna Division, in Monghyr, and probably in other districts of the Bhagalpur Division, nothing must be done for the present, for in the present temper of the people, the mere mention of inoculation would probably create a panic and intensify the difficulty of obtaining early information of the occurrence of plague. The previous approval of Government must be obtained before any action is taken on the Resolution in any of these districts.

4. In other districts the Lieutenant-Governor will leave it to the discretion of the Commissioner of the Division in each case to decide whether, and when, action should be taken. In no case should the Magistrate or the Civil Surgeon take any steps whatever without the previous approval of the Commissioner. In the Lieutenant-Governor's opinion the benefits to be derived from inoculation are not to be compared with those afforded by early information of the occurrence of plague and by carrying the people with us in all plague measures,

especially the evacuation of houses in rural areas. If in any district the Commissioner thinks that steps may usefully and safely be taken, the instructions in paragraph 9 of the Resolution should be strictly observed.

(20) *Precautions to be observed in performing inoculation.*

Extract (paragraph 1) from Home Department letter No. 914, dated 22nd March 1900.

In performing inoculations, the following precautions should be carefully carried out:—

- (a) the actual operation of inoculation should only be entrusted to trained and reliable persons, and supervision should be exercised over them to ensure that they use sterilized implements;
- (b) with a view to remove any possible ground for distrust as to the conveyance of disease by inoculation from one person to another, the syringe should be sterilized in the presence of the person about to be inoculated; and all persons employed in performing inoculations should be provided with a spirit lamp for sterilization by holding the needle in the flame; and
- (c) in order to prevent the possibility of the contamination of the vaccine while in use, instructions should be issued to all persons employed on inoculation that, after a bottle has been opened and only a portion of its contents actually used, the remainder should invariably be thrown away.

(21) *Instructions for the use of the Plague prophylactic.*

Enclosure to Resolution of Government of Bombay, No. 8156P., dated 28th November 1899.

1. Parcel to be opened and unpacked carefully. Any bottle found open, cracked or with the covering of the cork damaged is to be sent back to the Laboratory without being used. Prolonged exposure of the prophylactic to daylight is to be avoided.

2. The prophylactic is to be given by injection under the skin. For this purpose a hypodermic syringe of a suitable size is to be disinfected in the beginning, by keeping it filled with a 5 per cent. solution of carbolic acid for 24 hours. After that, if the syringe is not used for other purposes, it will be sufficient to keep it filled for one hour before commencing operations. After the completion of each series of injections the syringe is to be washed out three times with the same antiseptic solution. The needle should be sterilised by boiling in a test-tube before use, or should it by chance fall on the ground during the operations. Between each inoculation the needle should be kept immersed in carbolic lotion (1 to 20), which may conveniently be contained in the upturned lid of the metal syringe case. Syringes may be obtained from the Plague Research Laboratory, Parel, Bombay.

3. Each bottle before being opened is to be shaken and the contents well mixed up each time before being absorbed into the syringe.

4. When opening a bottle a pair of dissecting forceps is to be used, the branches being heated beforehand in the flame of a spirit lamp, and guarded from contact with any other unsterilised object.

5. While opening a bottle the mouth of it is passed several times through the flame of a lamp, and the paraffin melted. The cork is then withdrawn with the sterilised forceps, both branches of which are shoved in between the cork and the neck of the bottle, on two opposite sides simultaneously. In the case of bottles closed with India-rubber stoppers, no paraffin or other covering is used. The stoppers are easily withdrawn by the sterilised forceps. After the bottle is opened any contact between its mouth and other unsterilised objects is to be avoided; and if contact inadvertently occurs, the mouth is to be heated again in the flame for disinfecting it. The contents, or a part of it, is absorbed into the syring. The bottle is to be kept as nearly horizontal as possible during the whole time the cork is out. Leaning the neck of the bottle against the edge of the box-lid will be found convenient.

6. For an adult man, in average state of health, the standard dose is $2\frac{1}{2}$ cubic centimeters (15 minims counting for 1 c. c.). This is to be injected under the skin of the back of the upper arm, preferably the left one, avoiding as carefully as possible the muscles or the big vessels by entering the needle in a sloping direction (never at right angles).

The following table shows at a glance the proper doses to be given to persons in good health :—

If the dose marked on the bottle is—				
			2·5 c. c. then give—	5· c. c. then give—
Below 2 years	...	0·5 c. c., or $\frac{1}{20}$ full dose	...	1 c. c.
From 2 to 5 years	...	1·0 c. c., or $\frac{2}{5}$ " "	...	2· c. c.
" 6 to 11 "	...	1·5 c. c., or $\frac{3}{10}$ " "	...	3· c. c.
" 12 to 15 "	...	2·0 c. c., or $\frac{4}{5}$ " "	...	4· c. c.
" 16 to 50 "	...	2·5 c. c., full dose	...	5· c. c.

Women of all ages over 12 years should get 0·25 c. c. less than men of corresponding ages.

Persons over 50 years old should get 0·25 c. c. less for each decade above that age.

Children stand the treatment well, and no fear need be felt in giving these doses. The symptoms commence as a rule 3 to 5 hours after inoculation, and consist chiefly of swelling and pain at the seat of inoculation, and of a rise of temperature. The pain is felt particularly on movement of the part. The fever is accompanied by general



discomfort usual to this condition. No treatment of the symptoms is required beyond applying ice for the relief of headache if any is felt, and taking some rest. General symptoms subside after 24 to 36 hours; the pain at the seat of inoculation lasts for three or four days, disappearing gradually; a painless induration remains there for some time longer. It is desirable to produce a rise of temperature of at least 102°F. If the reaction is less marked, the operation may be repeated 3 or 4 days later, with the same or an increased dose, according to the result of the first inoculation. There is no harm in leaving a longer interval between the two inoculations. Note carefully the instructions on the label of each bottle, and attend to any directions on it for increasing or diminishing the amount to be administered.

7. No changes in diet or occupation are necessary beyond, if possible, taking some rest. Bathing in the open air should be avoided for some days. A simple purgative may be given 24 hours after the inoculation.

8. The prophylactic material is harmless, and can be thrown about without danger; but it is liable to get infected. A bottle once opened is therefore *not to be corked again*, but used up at once, or the rest of the contents thrown away. While a bottle is open, it should be guarded from insects flying or walking into it, or dust falling in—*vide* last sentences of paragraph 5 above. The empty bottles, the boxes, and, if possible, also the material in which they were packed, are to be returned to the Laboratory.

9. In properly closed bottles, and when kept in dark and sufficiently cool places, the prophylactic is likely to retain its power indefinitely.

(22) *Mode of sterilising inoculation needles.*

Inoculation needles may be sterilized by immersion in either (1) carbolic acid, or (2) carbolised oil kept hot by the flame of a spirit lamp underneath. In view of the fact that some importance attaches to the disinfection of the syringe being brought prominently to the notice of the persons about to be inoculated, the Government of India consider that preference should be given to the second method of sterilizing the needle—(*Government of India, Home Department, letter No. 1555, dated 5th June 1900.*)

Hypodermic needles and syringes may also be sterilized by "Dr. Hunt's Sterilization Lamp," which is supplied on payment by the Medical Store Depot, Bombay Command—(*Home Department letter No. 1171, dated 27th June 1901, and enclosures*).

(23) *Procedure for obtaining supplies of the plague serum and syringes.*

All applications from private individuals resident in Bengal for supplies of M. Haffkine's plague prophylactic serum from the Plague Research Laboratory, Bombay, are to be submitted to the Inspector-General of Civil Hospitals, Bengal, who will record his opinion whether they should be complied with.—(*Notification No. 533T.-P., dated 10th November 1899*)

The Inspector-General of Civil Hospitals, Bengal, should arrange in direct communication with the officer in charge of the Bombay Plague

Laboratory for such supplies of the prophylactic fluid as he requires. The fluid will be supplied free of charge.—(*Government order No. 323T.-P., dated 1st July 1899, and Home Department letter No. 2000, dated 20th June 1899.*)

Syringes may be obtained from the Plague Research Laboratory, Parel, Bombay—(*Paragraph 2 of the Instructions for the use of the plague prophylactic, page 69 of the Manual.*)

(24) *Rules for the transmission of plague cultures.*

No. 1640 ^{Sany.} _{Plague}, dated Simla, the 22nd June 1900.

NOTIFICATION—By the Government of India, Home Department.

IN exercise of the powers conferred by section 2 of the Epidemic Diseases Act, 1897 (III of 1897), the Governor-General in Council is pleased to cancel the regulations published with the notification of the Government of India in the Home Department, No. 2653, dated the 15th September 1899, and to make the following regulations to be observed by persons sending or taking from place to place in India cultures or other articles known or believed to contain the living germs of plague:—

1. No person who is not a Commissioned Medical Officer, a Military Assistant Surgeon, or a medical practitioner in possession of a qualification not lower than that of L.M.S. of the University of Calcutta, Punjab, Madras, or Bombay, shall, without the special permission of the Governor-General in Council or a Local Government, transmit or take in his private possession from one place to another any culture or other article which he knows or believes to contain the living germs of plague.

2. No such culture or other article as aforesaid shall be sent from one place to another—

- (a) unless it is securely packed in a hermetically-closed tin of adequate strength, placed in a strong outer box of wood or tin with a layer of at least three-quarters of an inch of raw cotton wool between the inner and the outer case, the outer case being enclosed in stout cloth, securely fastened and sealed, and labelled with such distinguishing inscription as will suffice to make immediately manifest the nature of the contents;
- (b) unless it is consigned to a Government laboratory or to a person specially permitted by the Governor-General in Council or the Local Government to receive such cultures or other articles; and
- (c) unless the sender declares its nature to the carrying agency and signs a certificate to the effect that he has advised the consignee of its despatch.

3. No package containing any such culture or other article as aforesaid shall be opened in any place which is free from plague without the special permission of the Governor-General in Council.

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(25) *Rules for the transmission of plague cultures by post.*

No. 3126S.R., dated Simla, the 21st June 1900.

NOTIFICATION—By the Government of India, Finance and Commerce Dept.

In exercise of any power conferred by section 21, and with reference to the provisions of section 19, sub-section (1), of the Indian Post Office Act, 1898 (VI of 1898), the Governor-General in Council is pleased to cancel the rules published with the notification in this Department, No. 4868S.R., dated the 24th October 1899, and to issue the following rules prescribing the conditions subject to which cultures or other articles known or believed to contain the living germs of plague may be transmitted by the inland post :—

- (1) Such cultures or other articles aforesaid shall not be accepted for transmission unless they are sent by a Commissioned Medical Officer, a Military Assistant Surgeon, or a medical practitioner in possession of a qualification not lower than that of L.M.S. of the University of Calcutta, Punjab, Madras, or Bombay, or by a person specially permitted by the Governor-General in Council or a Local Government to send such cultures or other articles; nor unless they are consigned to a Government Laboratory, or to a person specially permitted by the Governor-General in Council, or a Local Government, to receive such cultures or other articles.
- (2) The cultures or other articles aforesaid shall be securely packed in a hermetically-closed tin of adequate strength, which shall be placed in a strong outer box of wood or tin with a layer of at least three-quarters of an inch of raw cotton wool between the inner and outer case.
- (3) The outer case shall be enclosed in stout cloth which shall be securely fastened and sealed, and labelled with such distinguishing inscription as will suffice to make immediately manifest the nature of the contents.
- (4) The sender shall present the parcel at the Post Office accompanied by a declaration as to the nature of its contents, and a certificate signed by himself to the effect that he has advised the addressee of its despatch, and that such addressee, if the parcel should not be addressed to a Government Laboratory, has been specially permitted by the Governor-General in Council, or a Local Government, to receive such cultures or other articles. The certificate, moreover, shall show, on its face that the sender is a person authorized within the meaning of rule 1 of this notification to send such cultures or other articles.

Officers of Government desiring, on public grounds, to have bacteriological examination made in plague cases, should send cultures to the Professor of Pathology, Medical College, Calcutta, who is also Bacteriologist to Government.—(Circular No. 107 ^{Medl.} _{P.}, dated 27th December, 1899.)

(26) *Rules to be observed by officers when sending fresh materials to the Laboratory for bacteriological examination.*

[Home Department Letter No. 2971, dated 21st October 1899.]

A.—Dead animals, rats, &c.—

1. These should only be sent if freshly dead, or at least before any signs of putrefaction are evident.

2. If sent by post from outlying stations, they should be most carefully packed in ice, no spirit or other preservative fluid of any kind being used : water-tight bottles or cases being used in each case.

3. In Bombay they ought to be sent by special messenger *at once* ; or if found late at night, to be packed in ice and despatched early the following morning.

B.—Excreta, sputa, and the like—

1. These should be sent in carefully-stoppered and sealed bottles.

2. No fluid of a preservative nature ought to be added to them.

Note on a simple method of preparing cultures and slides for the bacteriological diagnosis of plague.

Requirements—

1. Spirit lamp.

2. Spatula.

3. Scalpel.

4. Forceps.

5. * Glass pipettes (sterile).

6. * Agar slants (dry).

7. Microscopic slides.

8. Carbolic lotion (1-20).

A.—To make cultures from a bubo *post mortem*, wash the skin over the bubo well with soap and water, and then with carbolic lotion, and dry it.

Heat the spatula strongly in the flame until it is hot enough to sear the skin. Do this.

Heat the scalpel (previously boiled) and make a small stab over the centre of the bubo, piercing the true skin.

Then having carefully passed one of the straight pipettes through the flame six times, break off the sealed end with the forceps (also previously boiled).

Push the pipette with a twisting motion into the bubo through the stab aperture made by the scalpel, and suck up a little fluid or semi-solid material.

Quickly take an agar slant in the left hand and remove plug with forceps and place between ring and middle fingers of left hand. Heat the mouth of the tube. Insert the pipette into the agar tube and blow out a small amount of material on the surface of the agar, leaving a drop to spread over the centre of a microscopic slide.

Then take one of the bent pipettes or spreaders, heat six times in the flame, and pass into agar tube and quickly spread the material deposited there over the surface.

N.B.—Rest the heated end of the spreader on the surface of the agar jelly to cool it, before spreading the material.

* These will be sent from the laboratory on application.

The mouth of the agar tube should be kept hot by turning it in the flame of the lamp while it is open, and the cotton plug ought to be burnt in the flame before putting it back in the tube with the forceps.

While open, keep the agar tube mouth downwards or in a horizontal position.

The remaining drop in the pipette should be blown out on the centre of a microscopic slide and spread over. The solid should, when dry, be passed three times through the flame. Care should be taken not to over-heat the slide.

The slide and the tube should be labelled, wrapped in paper, and carefully packed in cotton wool and sent off to the laboratory for report. If sent by post, the instructions contained in rule "C" of the rules promulgated by Government Resolution No. 4556P., dated 19th July 1899, should be observed.

The straight pipette used should be destroyed by melting the end in the flame. The bent pipette should be sterilised by holding in the flame of the spirit lamp till all the matter on it is charred.

B.—In a similar manner cultures can be obtained from the heart, blood, liver, and spleen, and it is always better to send cultures from various organs in every case.

CHAPTER IV.

MISCELLANEOUS PROVISIONS.

(1) TREATMENT OF PLAGUE CASES DETECTED IN RAILWAY TRAINS.

No. 114T.—P., dated Darjeeling, the 14th May 1900.

From—E. N. BAKER, Esq., Secretary to the Government of Bengal,
Municipal Department,

To—The Agent, East Indian Railway.

I AM directed to forward a copy of a letter from the Sanitary Commissioner, Bengal, No. 5540^{P.}₁, dated the 6th April 1900, and of its enclosure, regarding a case of plague which was removed from the train at the Dumraon railway station on the 24th March last. It will be seen that the information reached the Medical Officer in charge of the Chausa plague camp only after great delay, and consequently those travelling with the infected person were not detained or disinfected, and the carriage in which the patient travelled was allowed to proceed without being disinfected. I am to invite your attention to the letter from the Government of India, Public Works Department, No. 349R.T., dated the 21st April 1897 (copy enclosed), on the subject of the disinfection of railway carriages in which there has been a case of plague. It will be seen that such carriages should not be allowed to run further than the nearest medical inspection station until they have been satisfactorily disinfected in the manner prescribed in that letter. I am now to request that the following procedure may in future be adopted.

2. If a passenger is found to be suffering from plague before the train leaves the station, the patient should be taken on to the nearest inspection station where he and those in contact with him should be detained and the carriage in which they travelled cut off and disinfected.

3. If the train from which a sick passenger has been removed on suspicion has started before his case is diagnosed as one of plague, telegraphic intimation should at once be sent by the Railway authorities to the nearest inspection camp, in order that on the arrival of the train there, the passengers who were in contact with the sick person may be detained and the contaminated carriage cut off and disinfected.

4. The Lieutenant-Governor also requests that orders may be issued to the railway staff instructing them to give every possible assistance to the medical and other Government officers, and, as far as possible, to meet their wishes in the matter of conveying detected plague cases to the nearest inspection camp or plague hospital.

No. 439T.—P., dated Darjeeling, the 26th June 1900.

From—E. N. BAKER, Esq., C.S.I., Secretary to the Government of Bengal,
Municipal Department.

To—The Sanitary Commissioner, Bengal.

With reference to your letter No. 1006D., dated 7th June 1900, regarding the procedure to be adopted in dealing with a railway passenger found to be suffering from plague, and in continuation of this office letter No. 115T.—P., of the 14th May 1900, on the same subject, I am directed to say that when the train from which a sick passenger has alighted or been removed has started before it is found that he is suffering from plague, the Railway Company should be asked to send the passenger either to the nearest Plague inspection camp, or to the nearest civil hospital which contains separate accommodation for contagious diseases, whichever course may be most convenient. The other directions contained in paragraph 3 of the order of 14th May 1900, should also be carried out. Nothing should be said in the orders to be issued by the Eastern Bengal State Railway to the effect that compulsion should not be used. The Lieutenant-Governor is of opinion that a person suffering from plague, when travelling and at a distance from his home, cannot, as a mere matter of humanity, be left untended, and that the necessary power to provide for his treatment in a hospital must be given.

(2) DISINFECTION OF CONTAMINATED OR SUSPECTED RAILWAY VEHICLES.

No. 349R.T., dated Simla, the 21st April 1897.

From—G. A. ANDERSON, Esq., Under-Secretary to the Government of India,
Public Works Department,

To—The Secretary to the Government of Bengal, Public Works Department.

THE Government of India have had under consideration the advisability of cleansing all vehicles conveying passengers and their luggage from districts affected with the bubonic plague to other parts of India, and are of opinion that the disinfection of all such vehicles is absolutely necessary as a precautionary measure against the spread of infection.

2. For this purpose it is considered imperative that vehicles in which suspected or declared cases of plague have occurred should be stopped at, and not allowed to run further than, either the station at which such cases are removed from the carriage or the nearest medical inspection station,—preferably the former if the process of disinfection can be promptly and satisfactorily carried out there,—while non-suspect vehicles should be disinfected at the medical inspection station nearest to the boundary of infected areas. This need involve no detention to the latter beyond that necessary for their actual disinfection, the inspection of the occupants, and the disinfection of their baggage.

3. The Government of India accordingly desire that, subject to the foregoing remarks, the Administration (s) of the Railway (s) under the control of the Government of your control be requested to disinfect all vehicles conveying

passengers and their baggage from areas infected with the bubonic plague in the following manner:—

(a) Vehicles in which cases of plague have not been detected—

Third and intermediate class carriages, goods vehicles carrying passengers and luggage vans.—The interior woodwork, especially the floors and seats, to be thoroughly washed with a solution of perchloride of mercury (1 in 1,000), or with a carbolic acid solution (a wineglassful to a gallon) applied with a mop; the doors and windows to be opened and the vehicles exposed to the air.

First and second-class carriages.—The floors and woodwork to be treated as above, the cushions being also brushed and thoroughly cleaned.

(b) Carriages in which cases of plague have been detected—

(c) These, after being detached from the train, should be thoroughly washed with soft soap and lime-water. After an interval of two or three hours this should be washed off with plain water, and then the following disinfecting solution should be thoroughly sprayed all over the interior as well as the exterior of carriages by means of a syringe:—

Corrosive sublimate	...	...	½ oz.
Hydrochloric acid	...	...	1 oz.
Water	...	...	3 gallons.

This solution should be allowed to dry on the carriages. Special care must be taken to direct the solution into all the cracks and crevices and *jilmais*.

- (ii) After disinfection the carriages should be kept out in the open for 48 hours. They can then be brought into use again.
- (iii) In the case of first and second-class carriages, which afford greater facilities than third-class compartments for the harbouring of plague germs, it will be necessary, if the carriages are contaminated, to burn the cushions and to disinfect the woodwork in the manner indicated above, and re-paint the interior.
- (iv) Any compartment in which a suspicious case has travelled should be sprayed with the above disinfecting solution before being allowed to proceed.

No. 737 B.T., dated Simla, the 17th July 1901.

From—NEVILLE PRIESTLEY, Esq., Offg. Under-Secretary to the Government of India, Public Works Department,

To—The Secretary to the Government of Bombay, Public Works Department, Railway Branch.

I AM directed to acknowledge the receipt of your letter No. 1537, dated the 28th May 1901, forwarding for orders copy of correspondence

in which two proposals are made by the Bombay, Baroda and Central India Railway Company, viz. :—

- (i) that the orders contained in the Government of India letter No. 349R. T., dated the 21st April 1897, regarding the disinfection of vehicles conveying passengers and their luggage from districts affected with plague in which cases of plague have not been detected be cancelled; or
- (ii) that such vehicles be allowed to run on to their destination and be disinfected there, instead of at the medical station nearest to the boundary of infected areas.

2. In reply, I am to state that the Government of India concur in the opinion of the Government of Bombay that proposal (i) cannot be entertained so long as the Bombay Presidency proper continues to be an infected area. They are, however, pleased to accede to proposal (ii); it being understood that the instructions laid down in the Government of India letter quoted in regard to vehicles in which plague cases are detected shall continue to be strictly observed.

(3) PILGRIMAGE TO THE HEDJAZ.

Pilgrimage to the Hedjaz is at present regulated by special orders of the Government of India issued each year. The general outline is as follows :—

1. Chittagong is the only port of embarkation for pilgrims in Bengal.
2. A pilgrim camp is opened at Chittagong under the superintendence of an Officer appointed by Government for the purpose, where pilgrims are required to undergo ten days' detention; if at the end of this period they are found free from plague or other infectious diseases, they are allowed to embark. Pilgrims from other Provinces are collected in the camps established by those Provinces, and thence sent to Chittagong in special carriages and under police escort.
3. Tickets and passports are sold only in the Chittagong Pilgrim Camp.
4. The general arrangements for despatching pilgrims are entrusted to the Inspector-General of Police, Lower Provinces.

(4) RULES FOR THE TREATMENT OF RETURNING PILGRIMS.

The orders about Bengal, Bihar and Assam pilgrims arriving by sea in the Port of Calcutta are stated in the note at the foot of the rules for the prevention of the introduction of plague by sea into the ports of Bengal, page 27 of the manual.

(5) RULES REGARDING EXPORT OF WASTE PAPER AND RAGS.

The bringing, taking, sending or consigning of soiled linen and used bedding, rags and waste paper from Bengal to any other part of

India is prohibited under the orders of the Government of India. Waste paper does not extend to (1) old newspapers in bales, and (2) paper (whether newspapers or not) used for packing purposes.

Consignors of parcels to be transmitted by post or railway from plague-infected areas are required to declare that the parcels do not contain any soiled linen, used bedding, rags or waste paper.—(*Home Department letter No. 2255, dated 11th September 1900.*)

Waste papers—Waste paper, including cuttings, may be despatched from Calcutta to any paper mill in Bengal, subject to the following restrictions:—

“1. No waste paper from street-sweepings shall be collected for export. Collections shall only be made from Government or commercial offices, where proper supervision can be exercised.

“2. Every paper mill desiring to collect waste paper for export shall furnish Government with a list of the places at which they will collect it and of the days and hours of collection.

“3. All paper intended for despatch shall be enclosed in sacks prior to removal from the depôt; and the sacks shall be disinfected after use by means of a solution of corrosive sublimate.

“4. The carts or trucks on which the paper is carried shall be disinfected, if made of wood, with a solution of corrosive sublimate, and if of iron, with a solution of carbolic acid.

“5. On arrival at the mill, the paper shall be at once thrown into the boiler working at a pressure of 40 lbs., and shall be thoroughly boiled before being sorted or handled.

“6. These operations shall at all times be open to inspection and control under the orders of the Sanitary Commissioner for Bengal.”—(*Notification No. 1997 ^{Med.}/_{P.}, dated 12th September 1899.*)

The Sanitary Commissioner was informed in November 1900 that waste paper should be taken to the mills direct from the places at which it is collected, and not stored at a depôt on the way.—(*Government order No. 2665, dated 19th November 1900.*)

Rags.—The removal of rags by any other agency than that of the mill companies is prohibited under the orders of the Government of India; to mill companies it is permitted under the following conditions—

(1) The collection of rags in Calcutta is prohibited, except in accordance with these rules.

(2) Rags intended for despatch to paper mills in Bengal shall be collected at central depôts.

(3) No place shall be used as a central depôt by any mill until it has been sanctioned by the Sanitary Commissioner.

(4) After collection the rags shall be packed in bags, and shall be conveyed from the central depôt to the mill in the mill company's own carts or boats.

(5) The carts and boats shall be disinfected after each trip.

(6) On arrival at the mill, the rags, together with the bags in which they are packed, shall be immediately placed in a boiler and steamed at a pressure of 60 lbs. (equivalent to a temperature of 307° Fahrenheit) fifteen minutes.

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- (7) Rags which it is impossible to steam at once owing to their quantity shall be placed, while awaiting disinfection, under a thatched roof with open sides, so as to be freely exposed to light and air.
- (8) No rags shall be sorted or handled in any way until after disinfection.
- (9) The collection, storing, packing, transport, and disinfection of the rags shall be subject to the inspection and supervision of the Sanitary authorities of this Government at all times.—(*Notification No. 941 $\frac{Med.}{P.}$, dated 6th March 1900.*)

For the purposes of the above rules the term "Calcutta" includes both Calcutta and Howrah—(*Notification No. 1250 $\frac{Med.}{P.}$, dated 17th March 1900.*)

Permission to collect rags in Calcutta necessarily implies that they shall be handled before disinfection, but handling of rags not disinfected should be restricted as much as possible, and no sorting should be allowed to be done in Calcutta.

If hired carts are used for conveying rags from the central depôt in Calcutta to the mill company's boats in the river, the carts should be disinfected daily after their rag-carrying is over for the day and before they are used for anything else. This modifies rules 4 and 5 of Notification No. 941 $\frac{Med.}{P.}$, dated 6th March 1900—(*Government Order No. 796 $\frac{T.}{P.}$, dated 17th October 1900.*)

(6) DUTIES OF THE POLICE IN CONNECTION WITH PLAGUE.

Extract from Circular No. 8, dated 8th February 1898.

Duties of Station and Outpost Officers, Rural Police, and Chaukidari Panchayats.—Every rural policeman (chaukidar) shall forthwith report to his police-station or outpost the name of every person who has arrived in his village from any area infected with plague, together with the name of the householder with whom he resides, and shall also report fresh arrivals as they occur. Members of chaukidari panchayats are required to see that the above duty is faithfully performed. The names so reported, with dates, will be entered in a *Special List* to be kept at police-stations and outposts. He shall also, for the space of ten days next following after the persons shown in the *Special List* arrived in his jurisdiction, cause the state of health of such persons to be specially reported to him.

Increased mortality in villages to be inquired into.—Whenever the deaths reported from any village are more numerous than usual, and especially sudden deaths due to fever, the station or outpost officer shall forthwith make inquiries in order to ascertain whether the

symptoms of plague existed, and will, when forwarding "the weekly statement of deaths to the Civil Surgeon," prescribed by Bengal Police Circular No. 2 of March 1897, call the Civil Surgeon's attention to the increased rate of mortality.

Magistrates and Superior Police Officers required to supervise.—Magistrates and the superior police officers should, whenever practicable, attend the weekly muster parades at which all the rural policemen are assembled, so as to be able, by interrogation and by enquiry, to satisfy themselves that the rules laid down for their guidance are being duly carried out.

District and Rural Police to assist plague authorities.—The District and Rural Police shall give to the plague authorities any assistance they may require to enable them to carry out the duties they have to perform under this Regulation.

Town Police to report arrivals from infected parts and to keep them under observation.—The Town Police are required to report at once to the police-station the name of every person arriving from parts of the country infected with plague, who take up their temporary or permanent residence within the limits of their beats. The names so obtained, with dates of entry, will be entered in the *Special List* to be kept at town police-stations. A copy of this *Special List* will be sent to the District or Cantonment Magistrate and to the Health Officer, all new names being notified to them without delay. The Town Police are required to submit daily reports regarding the health of all the persons in the *Special List*, until a period of ten days from date of arrival has expired.

In order to supplement and check the system of separate reporting by Committees and by police officers, power has been given in Regulation B to cause burial- and burning-grounds to be registered. This power should be exercised in all municipalities where section 254 of the Bengal Municipal Act, 1884, is not in force, or has not been fully carried out, and in the larger non-municipal towns. The District Magistrate should also at once appoint special registering officers at all burial- and burning-grounds, and direct them to register all corpses brought for interment or cremation in the following form:—

Number. Name.	Date of death.	Name.	Sex.	Age.	Caste or profession.	Reported cause of death.	Residence at time of death.	Residence previous to last ill- ness.
1	2	3	4	5	6	7	8	9

An extract from the form should be sent at the close of every day to the Civil Surgeon for his information, and in order that enquiry may be made into the cause of any abnormal mortality in any particular locality.

It must be distinctly understood that no corpse is to be uncovered or examined, and that cremation or burial is not to be delayed or interfered with in any way. The information required must be procured by interrogation of the mourners. (*Vide* note under rule 11, Regulation B.)

Station officers should ask the chaukidars at the weekly *hasiris*—

- (a) whether any traders, dealers or artisans have arrived in the village recently from any plague-infected area; and if the answer is in the affirmative,
- (b) whether any deaths from fever have occurred among such persons, or among persons who live in the same house with them.—(*Government order No. 1366 Medl., dated 12th March 1897, to the address of the Inspector-General of Police, Lower Provinces.*)

CHAPTER V.

ABSTRACT OF GENERAL ORDERS REGARDING THE SUBMISSION OF
REPORTS AND RETURNS.

Submission
of Plague Re-
gulations to
the Govern-
ment of India
and Local Gov-
ernments.

Mode of
determining
an infected
area

Submission
of daily, week-
ly and monthly
reports to the
Government
of India and
other Govern-
ments.

1. Copies of all Regulations issued by the Government of Bengal should be submitted to the Government of India for information.—*Home Department letter No. 395, dated 9th February 1897.* Copies of only the specially important regulations should be forwarded to Local Governments and Administrations for information.—(*Home Department letter No. 2341, dated 18th December 1901.*)

2. An area in which a single sporadic case of plague is officially reported to exist should not be declared to be an infected area within the meaning of section II, chapter II of the Venice Sanitary Convention. A common-sense discretion should be exercised to determine when plague is to be regarded as established in any area.—(*Home Department letters No. 4764, dated 20th December 1898, and No. 510, dated 6th March 1901.*)

3. The following reports are required to be submitted to the Government of India in accordance with the letters from the Government of India, in the Home Department, No. 18, dated 2nd January 1900, and No. 887, dated 7th May 1901 as subsequently modified by No. 1772, dated 21st July 1902 and 2082, dated 22nd September 1902 (pages 88 and 91-2 of the Plague Manual) :—

(1) Daily reports of plague seizures and deaths and total mortality in the city of Calcutta.

In addition to the above, immediate telegraphic intimation should be sent of the extension of plague to any new district or important place. It should, if possible, be stated in the report whether the cases are fatal, whether they are imported from Bombay or other infected areas or whether they are of local origin; also whether they are discovered in the course of the medical examination of passengers at railway stations. (*Home Department letter No. $\frac{1897}{149}$, dated 22nd January 1897.*) The daily reports for Calcutta only are sent also to Assam by wire.

(2) *Weekly reports.*—These reports are for the week ending Saturday, and should be sent to the Government of India on Monday, so as to be received by them not later than Tuesday morning. The weekly reports should distinguish between imported and indigenous cases and should show separately figures for—

(a) Calcutta;

(b) Towns of 50,000 inhabitants and upwards in districts in which there are such towns.

* These are sent by letter when the Government of India are at Calcutta, and by telegram when they are at Simla.

- (c) The rest of the district.
- (d) For districts which have no towns of 50,000 inhabitants, the total number of cases and deaths for the whole district should be shown.
- (e) Any ports in the Lower Provinces although they contain less than 50,000 inhabitants, whenever plague cases occur in them.

The weekly returns, excluding the figures for Calcutta, are also sent by wire to Assam. The entire return is sent by post to District Officers, Commissioners of Divisions, Chairman of the Calcutta Corporation, &c., &c.

- * (3) *Monthly report.*—This comprises a return showing the daily seizures and deaths in each district during the previous month, accompanied by a brief narrative of any events of importance in connection with the plague which occurred during the month to which the return refers. The report should reach the Government of India not later than the 7th of each month.

The monthly narrative is sent also to the Bengal Chamber of Commerce, and the statement only to the United Provinces.

Fortnightly statements of attacks and deaths from plague in Calcutta are sent to the Colony of the Straits Settlements.

4. In order that the reports required by the Government of India may be punctually and correctly submitted, the following instructions have been issued to District Officers:—

(1) On the morning of every Sunday, a deferred telegram should be sent by the District Officer, showing the number of seizures and deaths which have occurred (a) in towns in his district with a population of 50,000 and upwards, and (b) in the rest of the district, during the week ending the previous Saturday. (*Circulars Nos. 17-18T.—P., dated 28th May 1901; vide pages 90-91 of the Plague Manual.*)

Orders to be observed by local officers in submitting daily weekly, and monthly reports.

The Magistrates of Chittagong, Balasore, Cuttack and Puri should also include in their weekly reports the week's plague seizures and deaths occurring at any port in their respective jurisdiction, although it contains less than 50,000 inhabitants—(*Government order Nos. 2055-56 Med.—P., dated the 10th December 1901, to the address of the Commissioners of the Chittagong and Orissa Divisions.*)

(2) If plague should exist in any town with a population of 50,000 and upwards, daily telegraphic reports of seizures and deaths should be submitted.* (*Circulars Nos. 17-18T.—P., dated 28th May 1901; pages 90-91 of the Manual.*)

In order that telegraphic intimation may be sent to the British Consul General at Alexandria and to the Government of India regarding the progress of plague in the ports of Bengal, the District Magistrates

* This is sent by letter whether the Government of India are at Simla or Calcutta.

of Chittagong, Balasore, Cuttack and Puri should submit to Government information on the following points by wire when occasion arises :—

- (1) Occurrence of first cases of plague.
- (2) Any lapse of 10 days without the occurrence of a case.
- (3) Any subsequent recrudescence of the disease.

The Code terms to be used in the Secretariat for communicating the above information to the Consul-General at Alexandria are :

- (1) Cases of plague reported in ... *Viburnis.*
- (2) Ten days have elapsed since recovery of last case of plague at ... *Vibratum.*
- (3) Ten days have elapsed since death of last case of plague at ... *Vibratio.*

(Home Department letter No. 1339, dated 19th July 1901, No. 2137, dated 19th November 1901, and Government order Nos. 2093-94 Med.—P., dated 11th December 1901.)

(3) Daily reports showing the progress of plague in rural areas should be sent by District Officers by post.—(Government order No. 1015 Med.—P., dated 10th March 1900, and Circular No. 36 Med.—P., dated 13th March 1900 ; page 89 of the Manual.)

(4) On the first of each month the Divisional Commissioner should submit a brief narrative of any events of importance in connection with plague which have occurred in his Division during the previous month. It should be accompanied by a statement showing the number of seizures and deaths in each district *day by day* during the month. (Circular No. 8 ^{Med.}/_{P.}, dated 13th January 1900 ; page 87 of the Manual.)

It is essential that this should reach Government by the 4th of the month. To ensure the punctual submission of this, District Officers have been instructed to send to Government direct a copy of the report which they submit to the Divisional Commissioner. (Circular No. 5 T.—P., dated 14th May 1900 ; page 90 of the Manual.)

As regards Calcutta, the figures for the month are shown by the Special Health Officer by wards and not by dates. The statement to be submitted to the Government of India, is, however, compiled from the daily vital statistics submitted to Government by the Special Health Officer.

Distinction between plague and suspicious cases not necessary in mufassal.

5. In places outside Calcutta it is not desirable to make a distinction between plague and suspicious cases. All cases in the mufassal should be shown as plague or not plague, and the former only should be reported to Government.—(Government order Nos. 554—62 T.—P., dated 15th September 1900.)

Reporting of plague-free districts and towns.

6. As soon as a district or a town of over 50,000 inhabitants previously included in the weekly or daily plague returns is considered or declared to be entirely free from plague, the fact should be reported to the Government of India and to all other Local Governments and administrations by separate letters, which should include information as to the date of the last death or recovery from the disease. (Home Department letters No. 2217, dated 8th September 1900, No. 1146, dated 24th June 1901 and No. 1476, dated 13th June 1902.) Local officers

are required to submit this information.—(*Circulars Nos. 14T.—P. and 19T.—P., dated, respectively, the 18th September 1900 and the 30th May 1901; page 92 of the Manual.*)

7. A district or a town is to be considered free from plague for this purpose if no death or fresh case of plague has occurred in it for 10 days after the recovery or death of the last case. When any area has been officially declared to be free from infection, no further plague report, return, or narrative regarding it is required after the submission of the narrative and returns of the month in which the last case is reported, unless a fresh case of plague should occur.—(*Circular No. 45T.—P., dated 20th September 1901; page 93 of the Manual.*)

Rule for determining when an area is to be considered as free from plague.

8. The Government of India consider it desirable that, in the event of a recrudescence of plague occurring in towns or villages which have been free from the disease for any length of time, particular efforts should invariably be made by the local authorities to ascertain whether any definite facts bearing on the probable cause or source of reinfection are available, and that any information sufficiently reliable and relevant to be of value may be communicated to the Government of India. The subject should be dealt with, and any information regarding it should be noted, in the monthly plague narratives. (*Home Department letter No. 2049, dated 4th November 1901 and Circular No. 76 ^{Medl.}_{P.}, dated the 29th November 1901.*)

The cause of the recrudescence of plague in any place to be enquired into.

A COLLECTION OF THE MORE IMPORTANT ORDERS PRESCRIBING THE SUBMISSION OF REPORTS AND RETURNS (REFERRED TO IN THE ABOVE ABSTRACT) PRINTED *in extenso*.

1. Circular No. 8 ^{Medl.}_{P.}, dated Calcutta, the 13th January 1900.

From—E. N. BAKER, Esq., Offg. Secy. to the Govt. of Bengal, Municipal Department,
To—All Commissioners of Divisions.

I AM directed to forward herewith, for information and communication to the District Officers of your Division, a copy of a circular issued by the Government of India in the Home Department, No. 18, dated 2nd instant, containing revised instructions for the reporting of plague seizures and deaths.

2. In order that the returns now prescribed by the Government of India may be punctually and correctly submitted, I am to request that the following directions may be very carefully complied with. They are in supersession of those conveyed in Government Circular Order No. 8 ^{Medl.}_{P.}, dated the 28th March 1899.

3. On the morning of every Sunday, a deferred telegram should be sent by the District Officer, addressed to the Registrar, Financial Department, Calcutta, showing the number of (a) seizures and (b) deaths which have occurred in his district during the week ending on the previous day (Saturday).

4. If plague should occur in any town with a population exceeding 20,000,* daily telegraphic reports of seizures and deaths should be submitted as at present.

* Now 50,000.

5. At the end of each month you should submit a brief narrative of any events of importance in connection with plague which have occurred in your Division during the month. These will take the place of the fortnightly narratives now submitted. It should be accompanied by a statement showing the number of (a) seizures and (b) deaths in each district, *day by day*, during the month. It is essential that this should reach Government by the 4th of the following month, and I am specially to request that you will make arrangements, so that the corresponding district reports may reach you in time to allow of this.

6. Attention is invited to paragraph 4 of the Home Department circular, the instructions in which should be carefully attended to.

2. No. 18, dated Calcutta, the 2nd January 1900.

From—J. P. HEWETT, Esq., C.S.I., C.I.E., Secy. to the Government of India, Home Department,

To—The Secretary to the Government of Bengal, Municipal Department.

I AM directed to request that you will in future submit weekly, in place of daily, reports of plague cases and deaths occurring in Bengal. The reports should be for the week ending Saturday, and should be sent to the Government of India on Monday. They must be received not later than Tuesday morning in order that the figures may be incorporated in the telegraphic report to the Secretary of State, which will in future be issued on that day. Daily reports should also be sent for towns of over 20,000 inhabitants whenever plague cases occur in them.

2. I am to ask that in addition to the weekly returns a return may be sent, at the beginning of each month, showing daily seizures and deaths in each district during the previous month. The return is required for transmission to the Secretary of State with the monthly narrative of events connected with the plague which the Government of India submit to His Lordship, and must, therefore, be received not later than the 7th of each month.

3. The Government of India will be glad to receive with the monthly return a brief narrative of any events of importance in connection with the plague which occurred during the month to which the return refers. These narratives should supersede the fortnightly account which the Government of Bengal at present submits.

4. Notwithstanding the instructions contained in this letter, immediate telegraphic intimation should be sent of the extension of plague to any new district or important place.

5. Daily returns should continue to be sent of plague seizures and deaths and total mortality in the city of Calcutta.

3. Circular No. 29^{Medl.}_{P.}, dated Calcutta, the 22nd February 1900.

From—R. N. BAKER, Esq., Secretary to the Government of Bengal, Municipal Department,

To—All Commissioners of Divisions.

THE recent serious increase of plague in the mufassal districts of Bengal renders it necessary that the progress of the epidemic should

be most minutely and carefully followed. I am, therefore, directed to request that you will be so good as to desire the District Officers subordinate to you to submit to this office, regularly and promptly, a daily telegraphic report addressed to the Registrar, Financial Department, stating, day by day, the number of attacks and deaths in their respective districts, as far as possible, for each village attacked. A similar record should be maintained in your office for facility of reference. This does not supersede the orders conveyed in Government Circular No. 8 ^{Medl.}_{P.}, dated the 13th January 1900, which should be strictly adhered to.

2. No telegram need be sent for any day on which there were neither cases nor deaths.

4. No. 1015 ^{Medl.}_{P.}, dated Calcutta, the 10th March 1900.

From—E. N. BAKER, Esq., Secretary to the Government of Bengal,
Municipal Department,
To—The Commissioner of the Patna Division.

I AM directed to acknowledge the receipt of your letter No. 153G., dated the 28th ultimo (received on the 5th instant), in which you take exception to the orders of Government conveyed in Circular No. 29 ^{Medl.}_{P.}, dated the 22nd ultimo, prescribing the submission of a daily telegram showing the number of cases of, and deaths from, plague in each village of every district. You represent that the cost will be disproportionate to the results obtained; that the reports will never completely represent the facts for any one day; and that the figures supplied will only detail the cases and deaths reported on each particular day, and not those which have occurred on that day.

2. In reply, I am directed to say that to enable effective measures to be taken to check the spread of plague (especially to secure the evacuation of infected houses at the outset), it is essential that the District Magistrate should receive immediate information of the occurrence of plague cases in each village. It is not sufficient that cases should be reported in a lump several days after their occurrence. The daily telegram was prescribed, not so much for any purpose of Government, as to make sure that the Magistrate was receiving the promptest possible reports of cases as they occurred. To this object the Lieutenant-Governor attaches the utmost importance, and he, therefore, cannot agree to dispense with a daily report showing the progress of plague in each village.

3. It will, however, be sufficient if these daily village reports are sent by post instead of by telegraph; and to this extent the orders contained in my Circular No. 29 of 22nd February are modified.

Circular No. 36 ^{Medl.}_{P.}, dated 13th March 1900.

Copy forwarded to all Commissioners of Divisions (except Patna), for information.

5. Circular No. 5T.—P., dated Darjeeling, the 14th May 1900.
From—E. N. BAKER, Esq., Secretary to the Government of Bengal,
Municipal Department,
To—All District Magistrates.

I AM directed to draw your attention to the circular of this office No. 8 of 13th January last, in paragraph 5 of which it was directed that the monthly plague narrative should reach Government through the Commissioner by the 4th of each month, so that the Provincial report might reach the Government of India by the 7th of the month.

The head-quarters of the Government of India are now at Simla, and to ensure that the Provincial report shall reach the Government of India by the 7th of each month, it is necessary to despatch it on the 4th. I am, therefore, directed to request that you will send a copy of your monthly plague narrative to Government direct, despatching it without fail on the 1st of the month. This course need not be followed if the report for your district is blank.

6. Circular No. 42Med.—P., dated Calcutta, the 19th April 1901.
From—H. C. WOODMAN, Esq., Offg. Under-Secretary to the Govt. of Bengal,
Municipal Department,
To—All District Officers.

I AM directed to request that you will be so good as to show separately in the weekly plague telegrams, in the future, (a) the figures for each town of over 20,000* population, and (b) one figure for the whole of the rest of the district.

* Now 50,000.

- Circular No. 43Med.—P., dated Calcutta, the 19th April 1901.
Memo. by—H. C. WOODMAN, Esq., Offg. Under-Secy. to the Govt. of Bengal,
Municipal Department.
COPY forwarded to all Commissioners of Divisions for information, in continuation of paragraph 3 of this Government Circular No. 8Med.—P., dated the 13th January 1900.

7. Circular No. 17T.—P., dated Darjeeling, the 28th May 1901.
From—S. B. HIGNELL, Esq., Offg. Under-Secretary to the Government of Bengal, Municipal Department,
To—All District Officers.

IN modification of the Government orders noted in the margin

Circular No. 8 ^{Medl.}/_{P.}, dated 13th January 1900, to the address of Commissioners of Divisions.

Circular No. 42 ^{Medl.}/_{P.}, dated 19th April 1901.

I am directed to forward herewith a copy of a letter from the Government of India, Home Department, No. 887, dated the 7th May 1901, and to request that you will be so good as to show separately in future weekly plague telegrams (a) the seizures and deaths for each town of 50,000 population and (b) the total number of seizures and deaths for the rest of the

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district. In districts in which there are no towns with a population of 50,000, the seizures and deaths of the whole district should of course be reported in one figure for each.

2. Daily telegrams should be sent only in the case of towns of 50,000 inhabitants.

Circular No. 18T.—P., dated Darjeeling, the 28th May 1901.

Memo. by—S. R. HIGNELL, Esq., Offg. Under-Secretary to the Government of Bengal, Municipal Department.

Copy forwarded to all Commissioners of Divisions for information, in continuation of Circular No. 43 ^{Medl.} _{Plague}, dated the 19th April 1900.

8. No. 887, dated Simla, the 7th May 1901.

From—J. P. HEWETT, Esq., C.S.I., C.I.E., Secretary to the Government of India, Home Department,

To—The Secretary to the Government of Bengal, Municipal (Medical) Department.

I AM directed to refer to paragraph 1 of the letter from this Department, noted in the margin, and No. 18, dated 2nd January 1900. to request that, in modification of the orders therein contained, the Government of India may in future be furnished with daily telegrams of plague seizures and deaths in Bengal in the case only of Presidency towns and of towns of 50,000 (not, as at present, 20,000) or more inhabitants, whenever plague cases occur in them. I am also to say that the weekly reports of plague, which are telegraphed to the Government of India every Monday, should show separately the week's figures for the towns reported on under the above orders in the daily telegrams.

9. No. 1772, dated Simla, the 21st July 1902.

From—W. S. MAERIS, Esq., Under-Secy. to the Govt. of India, Home Department,

To—The Secy. to the Govt. of Bengal, Municipal (Medl.) Dept.

I AM directed to refer to the Home Department letter No. 887, dated the 7th May 1908, and, in supersession of the instructions therein contained, to request that the Government of India may in future be furnished with the following telegraphic reports regarding plague in Bengal:—

- (a) daily telegrams showing the daily plague seizures and deaths in Calcutta City as well as the total mortality, and
- (b) weekly telegrams to be sent every Monday showing plague seizures and deaths for Calcutta and other towns of 50,000 or more inhabitants and for each district in the Province and in the case of Calcutta City the total and normal mortality also.

Immediate telegraphic information regarding the extension of plague to any new district or important place should continue to be sent as heretofore in accordance with the orders contained in paragraph 4 of the Home Department letter No. 12, dated the 2nd January 1900.

10. Circular No. 44T.—P. and Government Order No. 774T.—P., dated Darjeeling, the 7th October 1902.

From—H. C. WOODMAN, Esq., I.C.S., Under-Secretary to the Government of Bengal,

To—All District Officers, and the Chairman of the Corporation of Calcutta.

I AM directed to request, at the instance of the Government of India, that you will be so good as to distinguish in future weekly plague reports between indigenous and imported cases.

Circular No. 45T.—P., dated Darjeeling, the 7th October 1902.

Memo. by—H. C. WOODMAN, Esq., I.C.S., Under-Secretary to the Government of Bengal.

Copy forwarded to all Commissioners of Divisions for information.

11. Circular No. 14T.—P., dated Darjeeling, the 18th September 1900.

From—R. SHEEPSHANKS, Esq., Under-Secretary to the Government of Bengal, Municipal Department,

To—All Commissioners of Divisions.

IN continuation of this Office Circular No. 8 ^{Medl.}_{P.}, dated the 13th January 1900, I am directed to forward herewith a copy of a letter from the Government of India, Home Department, No. 2217, dated the 8th September 1900, and to request that the information required by the Government of India may, in future, be furnished to this office as soon as a district or town of over 20,000* inhabitants in your Division is considered to be free from plague.

* Now 50,000.

12. No. 2217, dated Simla, the 8th September 1900.

From—F. S. COWIE, Esq., Under-Secretary to the Government of India, Home Department,

To—The Secretary to the Government of Bengal, Municipal (Medical) Department.

I AM directed to refer to Home Department letter No. 18, dated the 2nd January 1900, and to request that, so soon as a district or town of over 20,000* inhabitants previously included in the weekly or daily plague returns is considered, or declared, to be entirely free from plague, the attention of the Government of India may, with the permission of His Honour the Lieutenant-Governor, be called to the fact by a separate letter, which should include information as to the date of the last death, or recovery, from the disease.

* Now 50,000.

13. Circular No. 19T.—P., dated Darjeeling, the 30th May 1901

From—S. R. HIGNELL, Esq., I.C.S., Offg. Under-Secretary to the Government of Bengal, Municipal Department,

To—All Commissioners of Divisions.

I AM directed to refer to this office Circular No. 14T.—P., dated the 18th September 1900, and to ask that the information therein asked for may be supplied this year as in the last.

For "towns of over 20,000 inhabitants" in the circular referred to, please now read "towns of over 50,000 inhabitants."

14.

No. 1144, dated Simla, the 24th June 1901.

From—F. S. Cowie, Esq., Under-Secretary to the Government of India,
Home Department,

To—The Secretary to the Government of Bombay, General Department
(Plague).

With reference to the concluding portion of Captain Condon's letter No. 2455-P., dated the 5th June 1901, and in modification of the orders contained in Home Department letter No. 2216, dated the 8th September 1900, I am directed to say that the Government of India do not desire to be furnished with information as to the disappearance of plague from towns with a population of less than 50,000 inhabitants.

No. 1146.

Copy forwarded to the Government of Bengal, Municipal (Medical) Department, for information.

15.

No. 1476, dated Simla, the 13th June 1902.

From—W. S. MARRIS, Esq., Under-Secy. to the Govt. of India, Home
Department,

To—The Secy. to the Govt. of Bengal, Municipal (Medl.) Dept.

In continuation of Home Department Endorsement No. 1146, dated the 24th June 1901, I am directed to request that with the permission of His Honour the Lieutenant-Governor, information as to the disappearance of plague from a district or a town of 50,000 or more inhabitants in Bengal may, if this is not already done, be in future communicated direct to all other Local Governments and Administrations, and to Political Officers, as well as to the Government of India as heretofore.

16. Circular No. 46T.—P., dated Darjeeling, the 20th September 1901.

From—H. M. KISCH, Esq., Offg. Secy. to the Govt. of Bengal, Muncl. Dept.,
To—All Commissioners of Divisions.

I AM directed to invite your attention to the marginally-noted circulars, and to say that when the report therein prescribed is submitted showing any district or town of over 50,000 inhabitants to be free from plague, information regarding the date of the last death or recovery should invariably be given.

2. A district or town should be considered as free from plague for this purpose if no death or fresh case of plague has occurred in it for 10 days after the recovery or death of the last case. When any area has been officially declared to be free from infection, no further plague report, return, or narrative regarding it is required after the submission of the narrative and returns of the month in which the last case is reported, unless a fresh case of plague should occur.

3. I am to request that the special attention of District Officers may be called to this matter.

APPENDIX A.

The following procedure should be adopted in obtaining the services of Military officers for plague duty :—

I.—A Local Government or Administration requiring an officer or officers for plague duty will apply to the Government of India, in the Home Department, detailing the number of officers required, and where and when they should be ordered to join.

II.—The Government of India will then address the Adjutant-General in India, who will issue instructions under the orders of the Commander-in-Chief to one or more Commands to supply the officers wanted, the Government of India being at the same time informed of the instructions issued.

III.—On learning from the Adjutant-General's Department from what Command the officers asked for will be supplied, the Government of India will inform the Local Government or Administration concerned, and all further correspondence in reference to the individual officers detailed by Commands, or their replacement, should they for any reason revert to Military duty, will be conducted between the Local Government or Administration and the Lieutenant-General Commanding.

IV.—When the officers selected have joined their appointments, the Lieutenant-General Commanding will communicate their names to the Adjutant-General's Department, and their services will then be placed at the disposal of the Government of India.

V.—When an officer's services are no longer required, he should be directed by the Local Government or Administration to rejoin his regiment, the Lieutenant-General Commanding and the Government of India being at the same time informed, and the latter will then replace the officer at the Commander-in Chief's disposal.

These Military officers will not remain on plague duty for more than a year at a time, but they will be duly relieved by substitutes before they are required to revert to Military duty.—(*Home Department letters Nos. 924 and 1196, dated 12th July 1899 and 15th August 1901, respectively.*)

APPENDIX B.

ALLOWANCES AND LEAVE.

The charge of plague operations in an infected district must be regarded as part of the general duty of an executive officer. No encouragement should be given to an impression that duty connected with the plague involves greater risks or is deserving of more favourable treatment than attendance in the infectious wards of a hospital or in a camp afflicted with cholera, which is accepted as part of the officer's ordinary duty. No recommendation should be made, in any but the most exceptional cases, for the grant of special salary, allowance or pension for plague duty.

The following leave concessions were, however, temporarily sanctioned by the Secretary of State—(*Resolution of the Government of India in the Finance and Commerce Department No. 5047, dated 15th November 1897*):—

- (i) To officers who have been employed on duties connected with the plague for a period of not less than five months—

Either (a) one month's extra privilege leave, or (b) full pay instead of half-pay for the first two months of furlough or other leave for which half-pay is ordinarily admissible.

- (ii) To officers so employed for a period of not less than ten months—

Either (a) two months' extra privilege leave, or (b) full pay instead of half-pay for the first four months of furlough or other leave as above.

It was subsequently decided that these concessions should be availed of at any time before the 29th June 1900 for plague service rendered before that date. It was conceded, however, that the leave might, with the consent of the Local Government, be enjoyed after the 29th June 1900 in cases where the exigencies of the public service had necessitated the refusal of leave when applied for, and had thus prevented the grant of the full concessions earned within the prescribed period. For the future, it was decided, plague duty performed in addition to ordinary work was to be remunerated specially (if sufficiently arduous to deserve special remuneration) by the grant, in the case of medical officers only (but not others), of special allowances during the performance of such duty instead of leave concessions subsequently enjoyable. (*Government of India's letters No. 775, dated 15th April 1899, No. 2024, dated 12th September 1899, and No. 5447, dated 4th October 1901.*)

The above concessions are not admissible—

- (i) to officers whose duty in connection with plague has not, in the opinion of the Local Government, been so unusually arduous as to render them deserving of the concessions;
- (ii) to officers who have been specially appointed to such duty and have been remunerated during the performance of it by special salary or allowances;
- (iii) to Secretariat and other officers whose additional work in connection with plague has been office work.

The special allowances given to certain classes of officers for plague duty and the salaries attached to special temporary appointments created on account of the plague are given below :—

A.—Allowances of officers deputed to Plague Duty.

Class of officers.	Particulars.	Allowances.
Military officers and troops.	(a) When employed on guard duty.	<i>Nil.</i>
	(b) When employed on sanitary duty, such as searching, disinfecting, superintending, scavenging, &c.—	
	(i) Combatant British Commissioned officers of over 5 years' service.	Rs. 800 a month.
	(ii) Combatant British Commissioned officers under 5 years' service.	Rs. 200 a month.
	(iii) British Non-Commissioned officers.	Re. 1 + annas 6, extra ration money per day.
	(iv) British privates ...	Annas 12 + annas 6, extra ration money per day.
	(v) Native officers ...	Re. 1-8 a day.
Medical officers wholly employed on plague duty.	(vi) Native Non-Commissioned officers.	Annas 12 a day.
	(vii) Sepoys ...	Annas 8 a day.
	Commissioned officers transferred from regimental or purely military duty.	Same as in the case of British Commissioned Military officers.
	Commissioned officers in civil employ.	Rs. 5 a day.
	Volunteers from the Army Medical Staff—	Special allowance of Rs. 300 a month in addition to Indian pay and allowances.
	Army Medical Staff officers sent from England.	£ 2 a day in addition to their English pay and allowances and travelling allowances according to rules.
	Uncovenanted medical officers, who at the time of their deputation to plague duty, may be discharging the duties of Civil Surgeon.	Rs. 5 a day.
Retired Commissioned Medical officers.	Rs. 500 a month (in addition to their pensions, which will continue to be a military charge).	The officer must have retired before the 1st April 1898, and his re-employment must be either on plague duty or in a post which cannot be filled in the ordinary way by reason of the officers, who would in ordinary course be available for it, being required for plague duty. The appointment requires the previous sanction of the Government of India.

NOTE.—When the troops employed on plague duty have been performing guard and sanitary duties in the same place together, that is to say, when some of the party have been employed on sanitary duties while others have been doing guard duty, the duties being interchangeable, all the troops should be paid allowances. On the other hand, where the duties assigned to any one body of troops have been exclusively of the nature of guard duties, no allowances should be granted. The allowances shall be paid only for the days on which the troops are actually employed on plague duty. All doubtful cases should be referred for the special orders of Government.

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A.—Allowances of officers deputed to Plague Duty—continued.

Class of officer.	Particulars.	• Allowances.
Retired Commissioned Medical officers— <i>conold.</i>	Senior Military Assistant Surgeons with the honorary rank of Captain or Lieutenant.	Rs. 5 a day.
Military Assistant Surgeons.	In Civil or Military employ on pay exceeding Rs. 150.	Rs. 3 a day
Military Assistant Surgeons.	In Civil or Military employ, on pay not exceeding Rs. 150.	Rs. 2 a day
Civil Assistant Surgeons.	.....	Rs. 2 a day.
Hospital Assistants ...	Engaged on plague duty involving personal risk, such as attending on plague patients.	Annas 8 a day. In addition to house-rent or free-quarters but in lieu of charge allowance.
Retired Military Assistant Surgeons.	Pay of their grade at the time of retirement + Rs. 100 allowance, subject to a maximum of Rs. 350 a month. In special cases the Local Government may raise the limit to Rs. 500. A Retired Honorary Commissioned officer of the Indian Subordinate Medical Department is entitled to double first-class travelling allowance by rail, and eight annas a mile by road.	The officers should be required to produce certificates of physical fitness, and their appointments should, in the first instance, be made for periods not exceeding six months.
Medical officers doing plague work in addition to their ordinary duties.	(1) Commissioned officers ... (2) Medical subordinates ... (3) Nurses or Midwives ...	Such local allowance, not exceeding one-fifth of the salary, as may be fixed in each case by Government. The allowance should be given only to officers whose additional plague work, such as that of medical inspection of passengers by road or railway, is entirely separate from, and outside the sphere of, their ordinary duties and not to officers whose ordinary and legitimate work, such as that of attending on the sick in hospital, has been increased owing to the occurrence of plague.
Additional Health Officers of the Port of Calcutta.	For examining vessels ...	Rs. 150 a month.
Temporary English Doctors.	Rs. 500 a month or such salary as may be fixed in their agreements with the Secretary of State.	Any increase of salary of these doctors must have the previous sanction of the Government of India.

A.—Allowances of officers deputed to Plague Duty—concluded.

Designation.	Salary.	Allowance.
Uncovenanted Medical officers.	Such pay, not exceeding Rs. 350 a month as the Surgeon-General may find necessary, with travelling allowances to and from the places to which they are posted at the rates of double second-class fares for journeys by rail, and annas 4 a mile for journeys by road.	
Temporary Civil Assistant Surgeons.	Recruited by the Inspector-General Civil Hospitals, Bengal, for plague duty.	Pay Rs. 100 + Rs. 33-8 allowances.
Temporary Civil Hospital Assistants.	.....	Pay Rs. 25 + Rs. 8 allowance.
Lady Nurses obtained from England.]	<p>(a) Rs. 175 a month in addition to free quarters, fuel, lights and punkah-pullers, commencing from date of embarkation to India;</p> <p>(b) double first-class fare by rail when travelling on duty; and single first-class fare when returning to England after termination of service. Resignation before expiry of agreement does not entitle to any return passage;</p> <p>(c) first-class passage when proceeding by steamer from one part of India to another on duty.</p>	If free quarters are not provided an allowance of Rs. 3 a day should be paid.

B.—Leave of Medical officers and lady nurses recruited in England.

Provisions of the Civil Service regulations relating to Privilege leave should apply to the cases of those Doctors and nurses recruited in England whose agreements do not provide for the grant of leave (*Home Department letter, No. 570, dated the 3rd May 1902*).

INDEX.

SUBJECT.	Page.	SUBJECT.	Page.
A		CERTIFICATE—	
ACT—Epidemic Diseases—	1	From the Civil Surgeons of Balasore and Pari may be accepted in lieu of inspection by the Port Health Officer	21
ADDRESS—Taking down of name and—at places of inspection	15	Of inoculation—confers exemption from detention at plague observation camps	16
ALEXANDRIA—British Consul at—. Communication of information about plague in ports to the—	85	CESS-PITS—Disinfection of—	53
ALLOWANCES—See Plague allowances.		CHARGES OR BLOCKS—Division of a district into—	11
ASSAM—Sending of the daily and weekly plague reports to—	84-85	CHARGE SUPERINTENDENTS—Appointment of—	11
B		CHAUKIDARI PANCHAYATS—Surveillance by—over arrivals from infected areas	81
BACTERIOLOGICAL DIAGNOSIS OF PLAGUE—Method of preparing cultures and slides for the—	74	CHEMICAL DISINFECTION—See Disinfection.	
BACTERIOLOGICAL EXAMINATION—		CHITTAGONG, PORT OF—	
Procedure for obtaining n—in plague cases	73	Rules for the inspection of outgoing vessels in force in Calcutta, extended to the—	17
Rules for sending fresh materials to the Laboratory for—	74	Treatment of vessels arriving at the—	27
BAGGAGE—Disinfection of the—of railway travellers except of those detained, prohibited	16	CIVIL SURGEON—	
BEDDING, USED—		Cause of abnormal mortality to be enquired into by the—	82
Consignors of parcels to declare that they do not contain—	80	Health Officers employed under the Plague Regulations in places outside Calcutta are subordinate to the—	3, 7, 11
Export of—prohibited	79	His relation to the medical officers in charge of plague camps	16
BILL OF HEALTH—		CLOTHING, CLEAN—Disinfection of—of clothes and emigrants	17
Form of—	20 & 23	COMPENSATION—	
Fresh—when necessary	18, 23	Payment of—for clothing damaged by disinfection in the ports of Calcutta and Chittagong	18
BOAT, COUNTRY—Inspection of travellers by—not permitted	16	Payment of—should invariably be liberal	6
BURIAL-GROUNDS—		CONTROL—Health Officers and Plague authorities are subject to the—of the Magistrate	7, 10, 13
Appointment of registering officers at—Registration of—	82 8	COOLIES—Disinfection of the clothing of—	17
BURNING-GROUNDS—		CORDONS—	
Appointment of registering officers at—Registration of—	82 8	Orders of the Government of India regarding—	57
C		Power to employ—withdrawn	52, 61
CALCUTTA—		CORP E—	
Method of preparing in the Secretariat the monthly plague report for—	86	Disposal of—	58
Port of—Treatment of vessels arriving at the—	26	Orders regarding examination of—	5, 62
Rules for the examination of vessels leaving—	17	Registration of—Form for the—	82
CAMPS—See Plague camps.		CULTURES—See Plague cultures.	
CARGO—Conditions under which loading of—may be permitted after medical inspection of a vessel	18	D	
CARRIAGES—See Railway Carriages.		DAILY PLAGUE REPORT—For Calcutta sent to the Government of India, and Assam	84

SUBJECT.	Page.	SUBJECT.	Page.
DAILY VILLAGE REPORTS—Submission by District Officers of—	80	EVACUATION—	
DEAD BODIES—Compulsory examination of—should never be attempted ...	5	Bengal Government orders regarding—Force not to be employed in carrying out—	46
DETENTION—		Government of India's remarks regarding—	6, 30—32
Limitations under which—of travellers at plague camps is authorized ...	16	Of street or quarter in municipal towns and cantonments	45
Persons holding inoculation certificates are exempted from—at plague camps ...	16	Of village	9
DETENTION OF TRAVELLERS—Orders of the Government of India regarding the—	60-61	Policy of relying mainly on—of infected quarters in the mufassal affirmed ...	13
DIAMOND HARBOUR—Pilgrims from the Hedjaz arriving at—Their treatment ...	27	Ten days—is ordinarily sufficient in rural areas, if the unroofing of the infected huts is complete	33
DISINFECTION—			67
Destruction of temporary structures in connection with	6	EXPENSES—	
Employment of force for carrying out—, prohibited	6	Incurred in carrying out the Plague Regulations to be paid from local funds	7, 10, 13
Government of India's remarks on— ...	46 to 55	Of railway medical inspection to be borne by Government	15
Instructions for—of clothing at ports ...	20, 23	Of removal of railway passengers suffering from infectious diseases should be met from Magistrates' contingencies	15
Of clothing of emigrants and coolies ...	17	EXPORT—Of soiled linen and used bedding, rags and waste papers, rules regarding the—	79—81
Of drains, cesspits and latrines	53		
Of fabrics liable to injury	52	F	
Of household effects. Destructive methods of—, prohibited	51	FACTORY—	
Of houses adjacent to infected houses of infected houses by the Health Officer	6, 9, 12	Definition of—	5, 3
Of merchandise not recommended ...	5, 9, 12	Report from—regarding occurrence of plague	4, 8
Of railway carriages	54	FEE—	
Of the baggage of railway travellers, except that of the detained, prohibited	77—79	Medical officers employed on plague work not to receive—	3
Owners of infected houses to carry out the directions of the Health Officer regarding—	16	Orders of the Government of India regarding—to be earned by the Port Health Officers for Medical Inspection of vessels on Sundays and closed holidays	19
Payment of compensation for clothing damaged by—	5	FEMALES—Examination of—to be made by female agency	5, 9, 12
Policy of relying mainly on—in towns affirmed	18	FORCE—Employment of—for carrying out evacuation or disinfection, prohibited	6, 30
Suggestions of the Indian Plague Commission regarding—	33, 54	FOREIGN VESSELS OF WAR—Inspection of—Procedure for the—	17
What classes of officers are to supervise—	46 to 55	FORTNIGHTLY PLAGUE REPORT—Sending of the—for Calcutta to the Straits Settlements	83
	6, 55	FRESH MATERIALS—Rules for sending—to the Laboratory for bacteriological examination	74
DISINFECTANT SOLUTION—			
Colouring of—depreciated	56	G	
Method of preparing a—	55	GRAIN—	
Preparation of—Sanitary Commissioner's instructions regarding the— ...	56	Disinfection of—	52
DISTRICT MAGISTRATES—Orders defining the relation of medical officers in charge of plague camps to the— ...	16	From an infected building—how treated	6
DISTRICT OFFICERS—Instructions to—for the submission of plague reports ...	85—93	H	
DISTRICT POLICE—To assist plague authorities	82	HÁZIRIS—See Weekly Háziris	83
DRAINS—Disinfection of—	53		
E			
EMIGRANTS—Disinfection of the clothing of—	17		
ENQUIRING AGENCIES Appointment of—	11		
EPIDEMIC DISEASES ACT	1		
Delegation to Local Governments of the powers conferred by the— ...	2		

SUBJECT.	Page.	SUBJECT.	Page.
HEALTH OFFICER(S)—		INFECTED AREA— <i>conclude</i>	
Appointment of—Previous approval of the Inspector-General of Civil Hospitals is necessary to the nomination	3, 7	Rural and town police to report arrivals from—	81-82
Appointment of—under Plague Regulation A	3	Station officers to enquire at the weekly baziris about arrivals from—	83
Appointment of—under Plague Regulation B	7	INFECTED SHIP—	
Appointment of—under Plague Regulation C	11	Definition of—Treatment at ports of arrival	24, 25
Definition of—in Regulation A	3	INFORMERS— Use of—in connection with plague, prohibited	4
Ditto ditto B	7	INOCULATION—	
In places outside Calcutta,—subordinate to the Civil Surgeon	3	Bengal Government orders as to how and when—to be introduced	68
Of the ports of Balasore, Chandbali, False Point and Puri	22	Government of India's Resolution on—Precautions to be taken in performing	63 to 67
Port—		ing	69
Definition of—	19, 22, 24	INOCULATION CERTIFICATE— Persons holding—are exempted from detention at plague camps	16
Fees to be earned by the—for Medical Inspection of vessels on Sundays or closed holidays. Orders of the Government of India on the subject— <i>See</i> Fee.		INOCULATION NEEDLES— Method of sterilizing—	71
Powers of—to be exercised subject to the control of the Magistrate	7, 10, 13	INOCULATION SYRINGE— <i>See</i> Syringe.	
Right of—to enter any house in which there may be a case of plague	5, 9	INSPECTION(S)—	
HEALTHY SHIP— Definition of—Treatment at ports of arrival	25	Of travellers by road and country boats not permitted	16
HEDJAZ—		Of vessels of the Royal Navy and of foreign vessels of war. Procedure for the—	17
Pilgrims returning from the—Their treatment at Diamond Harbour	27	Of vessels on Sundays or closed holidays—Orders of the Government of India regarding the fees to be earned by the Port Health Officers for Medical— <i>See</i> Fees.	
Procedure for sending pilgrims to the—	79	Of villages. Remarks of the Government of India about—	34
HOSPITALS, PLAGUE—		Organisation to be made for the—of villages	11, 12
Friends and relatives of plague patients to be admitted to—	6, 10, 13	Place of—Definition of—	14
In the larger towns no person to be removed to—without his consent	6	Powers of Government to declare any railway station, ferry or landing stage to be a place of—	14
Magistrate to provide—for persons suffering from—	6, 10, 13	Procedure at places other than places of—	15
Removal of moribund patients to—prohibited	6	Procedure for the—of vessels proceeding to ports out of India	17
HOUSES— Disinfection of—Sanitary Commissioner's instructions regarding the—	56	Rules for the—of vessels sailing from the port of Calcutta extended to Chittagong	17
HOUSEHOLD EFFECTS—		Rules for Railway Medical—	14
Destructive methods of disinfection of—, prohibited	51	INSPECTING MEDICAL OFFICER— Definition of—and his powers	14
Method of disinfection of	51, 56	INSPECTION STATION, RAILWAY— List of—in Bengal	14
HOUSEHOLDER— To report cases of plague or suspected plague	8, 11	INSPECTION STATIONS— Commissioners of Divisions to inspect plague—at frequent intervals	16
HOUSE-TO-HOUSE VISITATION— Power of making—	12		
HUTS— Destruction of—Limitations under which this should be done	6		
I			
INDIA, GOVERNMENT OF INDIA— Sending of daily, weekly and monthly plague reports to the—	84-85		
INFECTED AREA—			
Arrivals from—, surveillance over—may be entrusted to such volunteer agencies as are willing to accept the duty	4-33		
Method of determining an—	84		
		L	
		LABORATORY— Rules for sending fresh materials for bacteriological examination to—	74
		LATRINES— Disinfection of	53

SUBJECT.	Page.	SUBJECT.	Page.
LEAVE—		NAVY, ROYAL— Procedure for the inspection of vessels of the—	17
Plague— <i>See</i> Plague leave.		NEEDLES— <i>See</i> Inoculation needles.	
Privilege—Provisions of the Civil Service Regulations relating to— should apply to the case of those doctors and nurses recruited in England whose agreements do not provide for the grant of leave ...	98	NEWSPAPERS, OLD— are not waste paper	80
LIST— <i>See</i> Special List.		O	
LOCAL FUND— Expenses incurred in carrying out Plague Regulations A, B and C to be paid from— ...	7, 10, 13	OBSERVATION— Definition of the term ...	24
LOCAL OFFICERS—		ORISSA PORTS— Treatment of vessels arriving at the—	28
Cause of recrudescence of plague to be enquired into by— ...	87	P	
Instructions to— for the submission of plague reports ...	85	PACKING PAPER— is not waste paper ...	80
Reporting of plague free districts by ...	86	PAPER MILLS— Despatch of rags and waste paper to—Conditions of ...	80-81
M		PARADES— <i>See</i> Weekly Muster Parades.	
MAGISTRATE— Definition of—in Plague Regulation A	3	PARCELS— Consignors of—by post or railway to declare that they do not contain rags, waste paper, &c. ...	80
MEDICAL OFFICERS— Employed on plague work not to receive any fee from the people	5	PILGRIMS—	
MEDICAL PRACTITIONERS— Report by—of the occurrence of any cases of plague or suspected plague	4, 8	Treatment of— from the Hedjaz arriving at Diamond Harbour	27
MEDICAL OFFICERS IN CHARGE OF PLAGUE CAMPS— Their relation to the District Magistrate, Sanitary Commissioner and the Civil Surgeon	16	PILGRIMAGE TO THE HEDJAZ— Procedure adopted in the case of—	79
MERCHANDISE—		PERSONAL EFFECTS— Disinfection of—Sanitary Commissioner's instructions regarding the—	58
Disinfection of— not recommended ...	54	POLICE—	
Treatment of from plague-infected areas at ports of arrival ...	26	Duties of the— in plague matters ...	81-83
MILITARY OFFICERS— Procedure for obtaining the services of— for plague duty	94	Duties of the— in larger towns ...	8
MILLS— <i>See</i> Paper Mills.		PLAGUE—	
MONTHLY PLAGUE NARRATIVES—		Cause of recrudescence of— to be enquired into by the local officers ...	87
Cause of recrudescence of plague in any area long immune should be dealt with by District Officers in the— ...	87	Diagnosis of— after death ...	41-42
Method of preparing the— for Calcutta	86	Hospitals for persons suffering from— to be provided by the Magistrate ...	6, 10, 13
Sending of the— to the Bengal Chamber of Commerce ...	85	Householder to report cases of— or suspected—	4, 8, 11
Submission of copies of— by District Officers direct to Government ...	90	In the mufassal no suspicious cases to be reported to Government ...	86
MORBUND PATIENTS— Removal of—to plague hospitals, prohibited ...	0	Organisation adopted by the United Provinces for the detection of—in villages	37
MORTALITY—		Organisation for the detection of—in rural areas. Bengal Government orders on the—	11
Cause of abnormal— to be enquired into by the Civil Surgeon ...	82	Organisation for the discovery of—in rural areas. Government of India's remarks on the—	34, 35
Increased—in villages to be inquired into by the police ...	81	Procedure in case of suspected— — Regulation A— Extent of jurisdiction	5, 9, 12
N		Report of— by proprietors of lands and others	3
NAMES AND ADDRESSES—		Signs of— after death	11
Taking down of—at inspection stations	15	Simple rules for dealing with— ...	41
Taking down of—at railway stations except inspections station discontinued	16	Symptoms of—	40
		Use of search parties, paid spies and informers in connection with—, prohibited	4
		PLAGUE ALLOWANCES— Grant of— ...	95-98

INDEX.

v

SUBJECT.	Page.	SUBJECT.	Page.
PLAGUE AUTHORITIES—		PLAGUE REGULATIONS, A, B, C—	
District and rural police to assist ...	82	Date of taking effect of—	3, 7, 11
Powers of—to be exercised subject to the control of the Magistrate ...	7, 10, 13	Instructions explanatory of the provisions of— ...	32-34
PLAGUE, BACTERIOLOGICAL DIAGNOSIS OF—Method of preparing cultures for the— ...	74	POLICY—Instructions of the Government of India as to the—to be followed in carrying out plague measures ...	29-30
PLAGUE CAMPS—		PORTS, INDIAN—Procedure for the inspection of vessels proceeding from Calcutta and Chittagong to— ...	17
Commissioners of Divisions to inspect—not frequent intervals ...	16	PORTS—	
Expenses of—to be borne by Government ...	15	Communication to the British Consul at Alexandria of information of plague in—	85
Friends and relatives of persons detained in—to be admitted ...	15	District Officer's weekly reports should include the plague cases and deaths occurring at any port in their jurisdiction ...	85
Limitations under which detention of travellers in—is authorized ...	16	Instructions for disinfection of clothing at— ...	20, 23
List of—in Bengal ...	14	PORTS OF ARRIVAL—	
Medical officers in charge of—Orders defining their relation to the District Magistrate, the Sanitary Commissioner, and the Civil Surgeon ...	16	Rules for the examination of vessels at—in Bengal ...	24-28
PLAGUE CASES—Treatment of—found in railway trains ...	15, 79, 77	Treatment of healthy, suspected and infected ships at— ...	24-28
PLAGUE COMMISSION, INDIAN—Views of the—regarding the benefits of inoculation ...	64	PORT CLEARANCE—Grant of— ...	18, 23
PLAGUE CULTURES—		PORTS OF ORISSA—Inspection of vessels leaving the— ...	21
Intended for bacteriological examination to be sent to the Professor of Pathology, Calcutta Medical College	73	PORTS OUT OF INDIA—Procedure for the inspection of vessels proceeding to—	17
Method of preparing—for bacteriological examination ...	74	POST—	
Rules for the transmission of—	72	Consignors of parcels by—to declare that they do not contain any rats, waste paper, &c. ...	80
Rules for the transmission of—by post	73	Rules for the transmission of plague cultures by— ...	73
PLAGUE DUTY—Procedure for obtaining the services of Military officers for—	94	POWERS—	
PLAGUE-FREE—		Conferred by the Epidemic Diseases Act delegated to Local Governments	2
Information about—Districts and towns containing 50,000 population or more should be communicated to other Local Governments Administrations, &c., &c. ...	93	Of an Inspecting Medical Officer ...	14
Information about—towns containing less than 50,000 inhabitants not required by the Government of India	86, 92	Of Enquiring Agencies ...	12
Reporting of—districts by local officers	93	Of the District and Subdivisional Magistrate under the Plague Regulations may be delegated ...	10, 13
When an area becomes—no further report is required ...	93	Of the Health Officer or a plague authority to be exercised subject to the general control of the Magistrate ...	7, 10, 13
PLAGUE LABORATORY, BOMBAY—Supplies of plague prophylactic for Bengal to be arranged for by the Inspector-General of Civil Hospitals in direct communication with the— ...	71	PRIVATE INDIVIDUALS—Applications from—for supplies of plague prophylactic—Procedure for the submission of—	71
PLAGUE LEAVE—Grant of— ...	95	PRIVILEGE LEAVE—Doctors and nurses recruited in England. Provisions of the Civil Service Regulations relating to—should apply to the case of those—whose agreement do not provide for the grant of leave—See "Leave."	
PLAGUE INSPECTION STATIONS—See Plague Camps.		PROPRIETORS OF LANDS AND OTHERS—Report of plague by— ...	11
PLAGUE MEASURES—Instructions of the Government of India as to the policy to be followed in carrying out— ...	29-30	PUNCHAYATS—See Chaukidari Punchayats.	
PLAGUE PROPHYLACTIC—		PUNCHING—of tickets issued from infected areas ...	16
Instructions for the use of—	69-70		
Procedure for the submission of applications from private individuals for supplies of—	71		
Supplies of—for Bengal to be arranged for by the Inspector-General of Civil Hospitals ...	71		

SUBJECT.	Page.	SUBJECT.	Page.
Q		REPORTS, DAILY VILLAGE —Submission by District Officers of—	89
QUARANTINE —Orders of the Government of India regarding—	58	ROAD —Inspection of travellers by—and country boat not permitted	16
R		ROYAL NAVY —Inspection of vessels of the—Procedure for the—	17
RAGS —		RULES —Simple—for dealing with plague ...	41
Conditions of despatch of—to paper mills	80-81	RURAL AREAS —	
Consignors of parcels to declare that they do not contain—	80	Organisation for the detection of plague in—	11
Export of—from Bengal to any other part of India, prohibited	79	Unroofing of houses the preferable mode of disinfection in—	54
RAG PICKING —Prohibition of—	6	RURAL POLICE —	
RAG STORES —The Magistrate empowered to destroy—	6	Surveillance by the—over arrivals from infected areas	81
RAILWAY —Transmission of parcels by—Consignors to declare that the parcels do not contain rags, waste paper, etc.	80	To assist plague authorities	82
RAILWAY CARRIAGE —Disinfection of— ...	15, 77-78	S	
RAILWAY MEDICAL INSPECTION —Rules for—	14	SANITARY CIRCLES OR DISTRICTS —Division of the larger towns into— ...	4
RAILWAY PASSENGERS —		SANITARY COMMISSIONER —Orders defining the relation of the medical officers in charge of plague camps to the—	16
Detention of—Government of India's orders regarding the—	60	SEARCH PARTIES —Use of—to find out plague cases, prohibited	4
Expense of removal of—suffering from infectious diseases should be met from Magistrates' contingencies—See "Expenses."		SEGREGATION —	
Personal effects of—except those of the detained are not to be disinfected ...	16	Bengal Government orders regarding—in Calcutta	43
Railway police and railway authorities should co-operate in the matter of removal of—suffering from infectious diseases from railway carriages ...	15	Bengal Government orders regarding—in the mufassal	44
RAILWAY TRAIN —Treatment of plague patients found in—	15, 76, 77	In the larger towns plague patients not to be removed to hospitals without their consent	6
RECRUDESCENCE OF PLAGUE —Cause of—to be enquired into by local officers	87	Limitations under which—of plague patients to be carried out in minor municipal towns, cantonments, and villages	10, 13
REGISTRATION OF CORPSES —	82	Of contacts in the minor municipal towns and cantonments	9, 13
REGISTERING OFFICERS —Appointment of—at burial or burning grounds ...	82	Orders of the Government of India regarding—	42
REGULATIONS —Copies of only the specially important—to be sent to other Local Governments	84	SOILED LINEN —	
REPORT —		Consignors of parcels to declare that they do not contain—	80
By householders, medical practitioners and occupiers of factories regarding occurrence of cases of plague or suspected plague	4, 8	Export of—from Bengal to any other part of India, prohibited	79
Of plague by proprietors of lands and others	11	SPECIAL LIST —Names of arrivals from infected areas to be entered in a—kept at police-stations	81-82
When an area becomes plague free, no further plague report required ...	93	SPIES —Use of paid—to find out plague cases, prohibited	4
REPORTS AND RETURNS —		STATION OFFICERS —To enquire at the weekly hazards about arrivals from infected areas	83
Instructions to local officers for the submission of daily, weekly and monthly—	85	STREAM STERILISER —Procedure of conveying infected clothes to a distance, to a central—not recommended ...	52
Sending of daily, weekly and monthly plague reports to the Government of India and other Local Governments	84-85	STREAM STERILISATION —Of the effects of native crews and native ship passengers recommended	52

SUBJECT.	Page.	SUBJECT.	Page.
STERILISATION OF INOCULATION NEEDLES—Method of—	71	UNITED PROVINCES—	
STERILISATION—Procedure for obtaining Dr. Hunt's—lamp	71	Organisation adopted by the—for the detection of plague in villages	37
STRAITS SETTLEMENTS—Sending of the fortnightly plague statements for Calcutta to the—	85	• Sending of monthly plague reports to the—	85
SUBDIVISIONAL HEALTH OFFICERS—Ap- pointment of—	11	UNROOFING OF HOUSES—In rural areas —the preferable mode of disinfection	54
SUBDIVISIONAL MAGISTRATE—Powers of —under the Plague Regulations may be delegated	13	V	
SURVEILLANCE—		VESSELS OF WAR—Procedure for the inspection of—	17
Co-operation of the people them- selves is the first essential in exer- cising—	33	VIGILANCE AND MEDICAL COMMITTEES— Their appointment and duties	8, 11
Definition of the term—	24	VILLAGES—	
Police to exercise—over arrivals from infected areas	81, 82	Daily reports from—submission by District office's of—	89
Report by householders, medical practitioners and proprietors of fac- tories of any case of plague, or sus- pected plague	4, 8, 11	Increased mortality in—to be enquired into by the police	81
SUSPECTED SHIP—Definition of— . Treat- ment at ports of arrival	{ 24, 25 to 28	Remarks of the Government of India on the inspection of—	34
SYMPTOMS OF PLAGUE	40	W	
SYRINGE—Inoculation—may be obtained from the Plague Research Labora- tory, Bombay	72	WAR VESSELS OF— Procedure for the inspection of—	17
T		WARD COMMITTEES—Appointment of—in the larger towns	4
TEMPORARY ACCOMMODATION—Provision of—for persons required to vacate their houses	13	WASTE PAPER—	
TEMPORARY STRUCTURES—Destruction of — Limitations under which this should be done	6	Conditions of despatch of—to paper mills	80
TICKETS—Railway—issued from infected areas should be punched	10	Consignors of parcels to declare that they do not contain—	80
TOWNS—		Does not extend to old newspapers or paper for packing purposes	80
Chemical disinfection to be resorted to in—	54	Export of—, prohibited	79
Information about plague-free—contain- ing less than 50,000 inhabitants not required by the Government of India	93	WEEKLY HAZIRIS—See Weekly Muster Parades.	
TOWN POLICE—Surveillance by the—over arrivals from infected areas	82	WEEKLY MUSTER PARADES—	
TRAVELLERS—		Magistrates and superior Police officers to attend the—to satisfy themselves that the rules laid down for the guidance of the rural police in con- nection with plague are being carried out	2
Disinfection of the person of—not re- commended	52	Station officers to enquire at the—about arrivals from infected areas	83
Inspection of—by road and country— about not permitted	16	WEEKLY PLAGUE REPORT—	
Limitations under which detention of —in plague camps is authorized	16	Distinction between Indigenous and Imported cases in the—	84
Removal of—to hospitals	15	Instructions to local officers regarding the submission of—	85
Rules for the inspection of—	14	Sending of the—to the Government of India	84

